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Preparing PROJECT FEASIBILITY STUDIES

for Philippine Business Enterprises

VOLUME ONE

Vicente Muro

Foreword by
VICENTE T. PATERNO
Chairman, Board of Investments
Secretary, Department of Industry

Preparing
PROJECT FEASIBILITY STUDIES
FOR PHILIPPINE BUSINESS ENTERPRISES

Volume 1

VICENTE MURO

Foreword by
VICENTE T. PATERNO
Chairman, Board of Investments
Secretary, Department of Industry

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Preparing
PROJECT FEASIBILITY STUDIES
FOR PHILIPPINE BUSINESS ENTERPRISES

Vicente Muro

Volume 1

Failures and successes of Philippine business projects

Philippine projects which failed. Causes of business failures.

Nature of project feasibility studies

Parties requiring studies. Limitations and utility of studies. Preparation and revision. Time and cost. History.

Outlines of feasibility studies for projects in 9 industries

Manufacturing. Mining. Cattle ranch. Coffee plantation. Fishing. Subdivision. Hotel. School. Market.

Management study

Project construction. Project scheduling and PERT. Form of business organization. Ownership. Internal structure. Personnel.

Marketing study

Consumption, importations, and local production. Arithmetical and statistical demand projections. Product substitutes. Local competition. Pricing. Distribution channels, promotions, and marketing program.

Volume 2

Technical study

Manufacturing process. Machinery specifications and supplier. Rated capacity and location. Layout. Buildings and other structures. Raw materials. Power, water, and other utilities. Industrial waste.

Taxation study

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Financing study

Financial requirements. Alternative sources of financing. Debt-equity ratio. Policy on outside financing. Effective cost of financing. Maximum amount of financing.

Financial study

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Social desirability of projects

Government revenues. Foreign exchange. Development of industries. Benefits to employees and consumers. Social rate of return.

The Author

VICENTE MURO

Author, *How to Study & Finance Philippine Enterprises*
Author, *Financing Philippine Business Enterprises*
Editor, *Preparation of Feasibility Studies for Business Projects in the Philippines*

Professional management positions

President, Diamond Farms, Inc.
General manager, HI-Daiwa House Philippines, Inc.
General manager, HI-Motors, Inc.
Vice-president, House of Investments, Inc.

Former professional management positions

Director, Zamboanga Wood Products, Inc.
Director, Rockland Marble, Inc.
Vice-president, Investment Managers, Inc.
Manager, Investment Banking Division, House of Investments, Inc.
Treasurer, Mariwasa Distributors, Inc.

Former management consultancy positions

Vice-president, Managers and Consultants, Inc.
Analyst, Management Services Division, Sycip, Gorres, Velayo & Co.

Former government positions

Acting *director*, Presidential Economic Staff
Consultant, Program Implementation Agency

Former positions in trade and professional associations

Director, Money Market Association of the Philippines
Vice-president, Financial Executives Association of the Philippines
Chairman, Philippine Institute of Certified Public Accountants Financial Management Committee

Former participations in business seminars

Syndicate *Chairman*, World Bank Project Evaluation Course, U.S.A.
Director, Chamber of Commerce of the Philippines Seminar on Preparing Project Studies and Financing Business Enterprises
Consultant, Philippine Chamber of Industries Seminar on Financing Business Enterprises
Consultant, Program Implementation Agency Seminar Series on Project Studies and Project Evaluation

Director, Philippine Center for Professional Management Seminar Series on Project Studies

Lecturer, business seminars sponsored by the Central Bank, GSIS, Dept. of Education, Loans and Investments Council, Office of Economic Coordination, Sugar Development Committee, Chamber of Commerce of the Philippines, Phil. Association of Real Estate Boards, Manila Board of Realtors, Pasay Board of Realtors, Caloocan Board of Realtors, Phil. Institute of CPAs, International Chamber of Commerce of Albay, Savings and Loan Associations, Operation Brotherhood International, Council of Welfare Agencies, UP-Phil. Executive Academy, UP-Institute of Small Scale Industries, UP-Cebu Graduate School, University of Wisconsin, La Salle Graduate School, University of the East, Phil. College of Commerce, Ateneo de Davao, Phil. Center for Professional Management, Executive Development Academy, CCP Securities Corp., Special Services Corporation, Economic Development Foundation, and several other organizations.

FOREWORD

The establishment of new industries, as well as the expansion of existing capacities should be properly planned so that precious capital and entrepreneurial time and effort may not be wasted. A useful tool in the selection and planning of projects is a feasibility study.

The publication of this book, "Preparing Project Feasibility Studies for Philippine Business Enterprises," is very timely. As part of the government goal to attain sustained economic growth, the number of new enterprises being established now has reached record levels.

Since this book not only covers the procedures in preparing project studies but also gives relevant information on Philippine business and laws, the book may be of use not only to local business enterprises but also to foreign firms desiring to make investments in our country.

For the past 7 years, the author's prior book, "How to Study and Finance Philippine Business Enterprises" has helped project proponents, financial institutions, and government offices, in preparing project studies and in evaluating projects.

We hope this new book will prove to be even more useful.

VICENTE T. PATERNO
Chairman, Board of Investments
Secretary, Department of Industry

Preface

A few years back, in spite of considerable financial and technical backing, a chemical project failed even before it could start operations. The project proponents failed to consider a new, less expensive, competing product which wrought havoc on their projected market.

Another project, this time a cement plant, encountered difficulties when its building foundation weakened so that the management had to devise means of strenghtening it without tearing down the erected buildings and dismantling the installed machinery. Still another project, a ceramics plant, suffered set-backs that crippled it because it ran out of operating capital and could not any more obtain additional financing.

These are just three examples of several Philippine business enterprises that encountered difficulties. It is believed that these firms could have fared better if more thorough feasibility studies have been conducted.

Many businessmen still like to believe that they could base their decision to implement a new project or expansion program on the basis of their "feel" of the situation. Some even cite cases of successful enterprises that were established mostly on this basis, whereas there are cases of undertakings that met hardships in spite of elaborate preparatory studies. However, barring sheer luck and unexpected opportunities, a thoroughly planned enterprise is bound to be more successful than one which does not have the benefits of a good feasibility study.

This book was written to serve as a practical tool for the preparation of project feasibility studies. This is intended primarily for those who are responsible for the development of projects and the preparation of project studies for the ultimate use of: industrial, commercial, and agricultural firms; financial institutions; and private investors. These include executives of management and consulting firms, advertising agencies, accounting firms, realty firms, machinery suppliers, building contractors, engineering firms, tax and corporate law offices, as well as businessmen, project proponents and promoters.

In this book, concentration is given to new industrial projects. However, most of the basic principles as well as some of the illustrations apply as well to new projects and expansion programs of growing concerns in varied industries. Outlines for the preparation of project studies in eight non-manufacturing industries have been included. Various disciplines—organization and management, law and taxation, marketing and statistics, industrial and civil engineering, accounting and finance, and economics—have been covered insofar as they are related to project studies. Discussed also are new tools such as: the engineers' Program Evaluation and Review Technique (PERT); the finance executives' discounted cash flow rate of return or present value principle; and the economists' social rate of return concept.

All in all, the techniques contained herein serve primarily as a general guide in charting the course of an enterprise. Since each project has its own special circumstances, it will eventually require its own precise individual treatment—and here one must use one's own judgment.

Acknowledgments. The preparation of a publication as comprehensive as this would be impossible if it were not for the wholehearted support of the officials of the following private firms, government offices, and international organizations: Board of Investments, National Economic and Development Authority, Philippine Cement Corporation, DCCD Engineering Corporation, University of the Philippines, Metropolitan Waterworks and Sewerage System, National Power Corporation, Manila Electric Company and International Bank for Reconstruction and Development.

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VICENTE MURO

Makati, Rizal, August, 1975

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Chapter I

Failures and Successes of Philippine Business Projects

BUSINESS ENTERPRISES ARE OPERATED FOR PROFIT. Hence, entrepreneurs should plan out their projects in order to attain this objective. However, due to failure to observe the basic safeguards, a number of enterprises actually plunge into difficulties, thus negating the attainment of the profit objective.

Business difficulty means the failure of an enterprise to attain normal and profitable operations within a reasonable period. For the seven actual Philippine projects diagnosed in this chapter, difficulty refers to: failure to sell enough goods at a reasonable price; failure to meet the loan amortizations; failure to process the raw materials into marketable products; failure to control the production cost; failure to acquire the required land; failure to obtain the basic contract; or failure to raise adequate working capital.

Difficulties are caused by a number of causes: some within the control of management, and some beyond. In the seven Philippine projects discussed, some of the immediate causes within the control of management are: undetected presence of superior competing products; failure to perfect the manufacturing process and produce high-quality products; unforeseen high moisture content of raw materials; unexpected high cost of gathering the materials; legal complications in the projected lease of agricultural lands; legal contract with the wrong government entity; and understated cash requirements.

Difficulties ultimately result in the abortion of a project, sale of an enterprise, foreclosure of the mortgaged properties, initial losses because of unreasonable delays in the start of commercial production, or sustained unprofitable operations. All of these mean ultimate losses to the investors.

The cause-and-effect relationships are schematically shown in Exhibit 1.

It is believed that in the majority of the seven cases, the immediate causes of the difficulties stem more from the lack of foresight on the part of the project proponents and investors than from circumstances beyond their control. It is considered that the immediate causes of failure could have been averted had thorough project feasibility studies been promptly undertaken.

1. PHILIPPINE PROJECTS WHICH FAILED

The seven projects analyzed here range in size from about ₱100,000 in total cost to almost ₱50,000,000. They are in the manufacturing, agricultural, and real estate industries. Two of these projects are now operating normally although they previously suffered substantial losses due to the high cost of correcting the basic defects in their designs and the corresponding prolonged delays in their timetables. One project is now operating at only a fraction of its installed capacity due to unsolved technical difficulties. Three projects have been abrogated many years back. The properties of another one were foreclosed.

The projects which are studied are:

Project	Industry	Immediate cause of business difficulty
A	Chemicals	Undetected presence of a superior competing product
B	Ceramics	Failure to perfect the manufacturing process

Project	Industry	Immediate cause of business difficulty
C	Cement	Unforeseen high moisture content of raw materials
D	Pulp and paper	Unexpected high cost of gathering the raw materials
E	Agriculture	Legal complication in the projected lease of public agricultural lands
F	Real estate	Legal contract with the wrong government entity
G	Ceramics	Understated cash requirements

Project A - Undetected Presence of a Competing Product. The project was incorporated in 1958 with the aim of manufacturing locally an industrial chemical product which was being imported at that time. The project promoter was formerly the sales manager of the importing firm handling the imported product. He was able to have as stockholders several local firms which are the major users of this particular industrial chemical.

In 1960, relying on the promoter's knowledge of the industry, the stockholders decided to proceed with the project. Accordingly, contracts were signed with: a foreign licensor, a foreign machinery supplier, a foreign financial institution, and a local engineering firm.

However, this inadequately-studied decision to proceed with the project proved to be disastrous. The stockholders were not aware that a superior competing product was coming up in the market. Before 1950, the process for the manufacture of the new substitute chemical was already perfected. By 1958, the new product was already in commercial production in foreign countries, and sales have been consistently zooming up and replacing the conventional product. This was due to the fact that the process for the manufacture of the new chemical is simpler. Hence, the cost of production and selling price are much lower. Added to this is the fact that in most applications the new product is more effective.

It was only in 1962 that the stockholders realized that they have made a bad decision earlier. At this time the firm had already:

1. Made a downpayment on the machinery ordered from abroad;
2. Purchased the factory site;

3. Paid a million pesos in engineering fees;

4. Incurred hundreds of thousand pesos in pre-operating expenses; and

5. Received from the foreign financial institution a part of the loan proceeds.

The stockholders, rather than incur losses in operations, decided to abort the project and lose a large part of their initial investment.

Project B - Failure to Perfect the Manufacturing Process. The project proposed to manufacture ceramics. On the onset, the general idea of ceramic manufacture seemed to be simple as it apparently just involves the processing of clay and a few other raw materials and the subsequent mixing and firing. Actually, however, the manufacture is more complicated, and takes time before it can be perfected by an individual plant. This is so because it requires clay and water with the right chemical contents and physical properties; intricate balancing of the materials input; and delicate handling and control of the work in process, specially while firing in the kiln.

With a little more than a layman's concept of ceramic manufacture, the stockholders decided to implement the project. They obtained a loan from a local financial institution, ordered the machinery and went into commercial production. Immediately after the start of commercial operations, however, the management realized that most of their factory products are of such a low quality that they cannot command the projected sales price.

The operations continued for some months without a significant improvement in the quality. The expected cash collections from the sales did not materialize. Subsequently, the company ran out of operating capital and could not pay off the loan amortizations. Finally, the local lending institution foreclosed the machinery.

The stockholders lost their investment. The local lending institution, after having acquired the machinery through foreclosure, was not happy either. It could not operate the plant. The machinery was sold later on to another group. However, the proceeds from the resale were less than the unrecovered loan from the project so that the lending institution lost part of its own investment. Interest was not earned on the loan. Furthermore, its funds were tied down with the project for a number of years.

Project C - Unforseen High Moisture Content of Raw Materials. The project was organized to manufacture cement.

Preliminary surveys revealed that the moisture content of the clay raw materials averaged 5%. Considering this low moisture content, the dry process of manufacture was adopted, and the corresponding machinery ordered. After the machinery was installed, it was noted that the machinery could not use directly the clay raw materials in the area as the moisture content turned out to be 12%.

Because of this development, additional units of machinery had to be ordered and the production schedule was delayed for almost three years.

The results were:

1. The project was not able to produce and sell for three years, thus losing anticipated revenues;
2. The stockholders lost part of their investment; and
3. The amortizations on the loans could not be promptly met.

Currently, however, the plant is operating at almost full capacity.

Project D - Unexpected High Cost of Gathering the Raw Materials. Project D is in the pulp industry. The management set up the factory in an area where the major raw material, a certain plant specie, abounds.

After operating the plant for a short time, two limitations regarding the selected raw material were noticed:

1. The gathering of the materials turned out to be very expensive as they are bulky and have to be collected over a wide area; and
2. The silica content proved to be high, thereby causing damage to the boilers.

Because of these factors the production schedule was delayed and the production cost exceeded the original estimate.

Project E and F - Legal Limitations. The legal aspect is another of the areas easily overlooked by project planners. In some cases, the success or failure of a project may depend on its legal status. An agro-industrial project, which was proposed to be majority-owned by foreigners failed to materialize when its right to lease some tracts of local agricultural land was questioned.

A real estate project, after proceeding with its reclamation operations, and after having made some sales, had to subsequently fold up. It was realized that although it had the proper contract, the contract was not made with the proper government entity.

Project G - Understated Financial Requirements. The project was incorporated in 1956 to make ceramic products. The proponents failed to make a realistic estimate of the cash to be turned in by the stockholders.

During the trial runs, quality products were produced. Based on computations made at this time, the cost of production will be reasonable when commercial operation start. However, immediately before the start of commercial operations in 1962, the management realized that they badly needed working capital. However, the original stockholders could not turn in additional amounts as their financial resources were very limited. Creditors refused to give additional loans as most of the assets were already mortgaged. Thus, operations were suspended as the management looked around for fresh financing.

The proponents' inadequately-studied decision on the amount to be turned in by the original stockholders turned out to be the factor that delayed the operations of the project, and caused the stockholders a loss of their investment.

2. PHILIPPINE PROJECTS WITH ADEQUATE STUDIES

The projects described above may be compared with the performance of three projects which were properly studied. One of them is now operating successfully. Following the recommendations which were based on the project study, the proponents were able to locate a better market for their product, thus increasing the profitability.

The second project was not pushed through—for good.

The third project is still operating—but losing money. However, the firm which was approached for financing, and which carefully evaluated the project, is glad that they did not invest in the project.

Project H - Tapping of a Better Market. The project considered the pragmatic expediency of making in the Philippines, semi-processed items which can be exported to the United States. The project proponents were encouraged by the idea that the project might make money in this line of business because of the preferential tariff treatment of Philippine goods exported to the United States in accordance with the provisions of the Laurel-Langley Agreement.

After a thorough study, however, the project management decided that instead of exporting their products to the United States, they should supply instead the local market. This was a well-taken decision, based on two comparative studies—one study assumed that the market will be in the United States and the other one considered the local market. These studies revealed that although the project will be profitable if the products are to be exported, the profitability will be increased if the products are sold locally.

Project I - Limited Market. Company I has been in operation for quite some time, manufacturing and marketing some consumer items. All of the major raw materials were being imported. About 80% of these are natural materials, and 20% synthetics. Technical studies showed that the product quality may be improved if the raw materials mix is changed to 40% natural materials, and 60% synthetics. Accordingly, the management considered the plausibility of setting up Project I which will make the synthetic raw materials for the consumer items finishing plant of Company I.

The management approached possible machinery suppliers for the project. The foreign supplier who submitted the most satisfactory terms subsequently prepared a feasibility study which showed that the over-all operations of Company I will be improved if Project I is implemented.

However, the management of Company I had another project study prepared, this time by local consultants. The latter study showed that it was not advisable to implement Project I, as the firm's requrements for the synthetics were much lower than the capacity of the smallest economical plant size. A comparison of the basis used in the two studies revealed that the study prepared by the foreign machinery supplier assumed that the plant will be operated at full capacity and that all the production will be disposed of—which was not the case. Furthermore, it did not take into account the local factors such as the high prices of raw materials and spare parts.

The management decided to call off the project.

Project J - Costly Imported Materials. Company J has been in operations for many years, and has accumulated idle funds. In 1963, the management of the firm was approached by the proponents of Project J which needed financing.

Project J started operations two years earlier. Using imported chemicals, it is the exclusive Philippine manufacturer of a certain type of construction material which is being manufactured also abroad where it has proved to be quite popular. Compared with the conventional local competing products, the product of Project J is of superior quality. Apparently, then, Project J was bound to be successful.

However, Company J took pains to make a thorough study of the project. Since the main raw materials must be imported, the cost of production comes out higher than the price of local competing products. The study showed that in spite of the product's superior quality, the price disadvantage cannot be adequately offset. Product J is able to compete successfully in developed countries because the basic raw material was being produced right there.

The management of Company J, therefore, decided not to invest in Project J. This decision proved to be a good one, since Project J has kept on losing since 1963. Incidentally, the manufacturer of Product J in a South American country became the first borrower from a leading international financial institution to default on its loan amortization.

3. IMPORTANCE OF COMPREHENSIVE PROJECT STUDIES

The indispensability of comprehensive project studies in the planning and implementation of projects have been stressed by the performance of the two-groups of projects analyzed above.

When no reliable studies are prepared, the project proponents and financiers are unable to have sound bases in deciding which of the projects to execute. They blunder into losing undertakings since the drawbacks in the initial phase are not detected, and the difficulties in the execution of the plans are not foreseen.

In Project A, for instance, adequate studies should have alerted the proponents on new product development, and prevented the launching of a project which was no longer practicable. Instead, the capital and energies spent should have been channelled into the manufacture of the new competing product. In Project B, the intricacies in the manufacturing process should have been resolved beforehand.

When exhaustive studies are prepared on time, the project proponents may be guided to make some basic changes in the plan so as to make the venture practicable or to increase its profitability. Project studies can also pinpoint the undertakings which cannot be made feasible and hence should be aborted before losses are incurred. Thus, in Project H, the marketing studies and comparative financial projections convinced the project proponents to change the market location. In the case of Project I, the project studies advised the management that the demand could not as yet support the smallest economical plant size, and that the project should be cast aside.

A sensible project study should recommend to the prospective financiers whether or not to invest in a project. Thus, is the case of Project J, the study showed the prospective investor that the project was not going to be competitive due to costly imported raw materials, and hence should not be considered for investment.

CAUSES AND EFFECTS OF

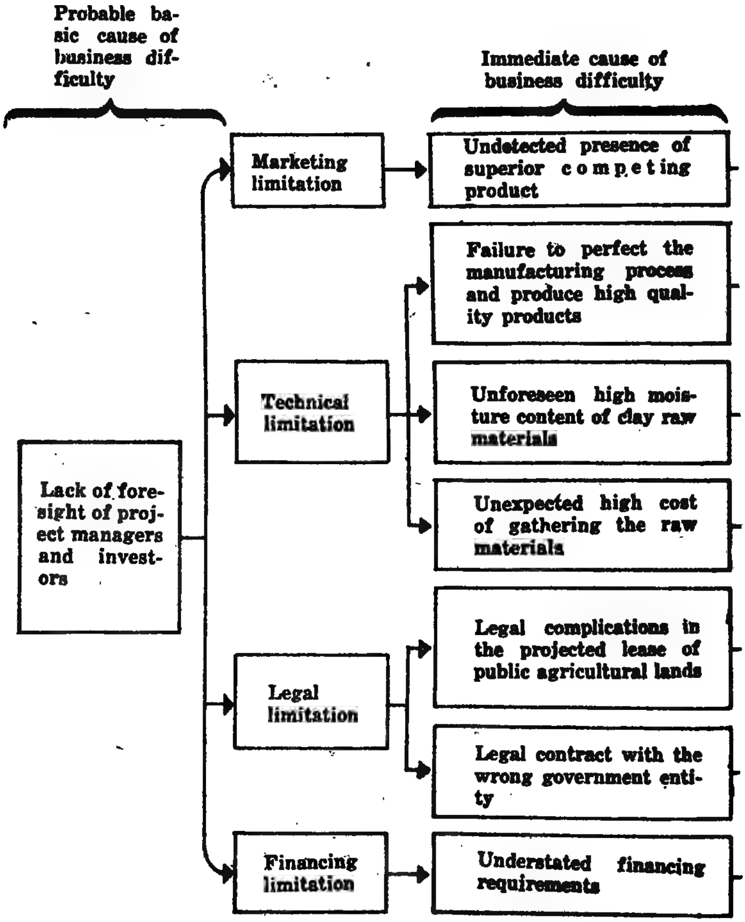

Probable basic cause of business difficulty
Immediate cause of business difficulty
Lack of foresight of project managers and investors
Marketing limitation
Technical limitation
Legal limitation
Financing limitation
Undetected presence of superior competing product
Failure to perfect the manufacturing process and produce high quality products
Unforeseen high moisture content of clay raw materials
Unexpected high cost of gathering the raw materials
Legal complications in the projected lease of public agricultural lands
Legal contract with the wrong government entity
Understated financing requirements

Exhibit 1

PHILIPPINE BUSINESS FAILURES

Type of business difficulty	Effect of the business difficulty	Project affected and industry classification
Failure to sell enough quantity at profitable price	Abortion of the project	Project A Chemicals
Limited cash receipts from sales of low-quality products and failure to meet loan amortizations	Foreclosure of mortgaged machinery	Project B Ceramics
Failure of the dry-process original machinery to process the clay materials	Purchase of additional units of machinery	Project C Cement
High cost of production	Unprofitable operations	Project D Pulp and paper
Failure to lease the agricultural lands	Abortion of the project	Project E Agriculture
Illegal real estate operations	Abortion of the project	Project F Real estate
Undercapitalization and shortage in working capital	Delay in the start of operations	Project G Ceramics

Chapter II

Nature of Project Feasibility Studies

A PROJECT FEASIBILITY STUDY, SOMETIMES CALLED A project study or a feasibility study, is an investigation which ascertains the viability of an undertaking. The undertaking may be a new or proposed venture, or an existing enterprise. The enterprise may or may not have an expansion program.

While too often a project study is merely considered as a procedural requirement for securing financing or government assistance, its real objective is to guide project promoters, business managers, and financial executives in determining the actions they must take on a project in order to bring about its successful operation.

The preparation of a project study involves:

1. The collection of data (thru research work) which are relevant to all aspects of the undertaking;
2. The analyses of the collected data; and
3. The formulation of recommendations, based on the analyses.

Parts of Project Studies. A good project study should cover the various phases of the operations of a project: organization and management, marketing, technical, taxation, and financing. Finally, the study should include the financial projections which estimate the profitability and cash requirements of a project.

Management Aspects. A study of these aspects will help the project management select the appropriate from of business organization, effect the required Filipino stockholdings in the organization, design the internal structure of the organization, and staff the organization. All of these should be geared towards the efficient operation of the project.

Marketing Aspects. The aim of the marketing study is to ascertain the future total demand for the product, determine the competitive situation of the product in the industry, establish the annual quantity which it may sell, estimate the future selling prices, and design the marketing program for the product.

Technical Aspects. The objective of the technical study for a manufacturing firm is to select the manufacturing process, plant rated capacity, machinery design, plant location and layout, structures specifications, and operating requirements.

Actually, the studies on the plant capacity and location are not of a purely engineering nature. For instance, the rated capacity may be limited by a small and slow-growing market, or by an inadequate financing. On the other hand, the plant location may have to be near not only to the sources of raw materials but also to the market centers.

Taxation Aspects. The taxation study attempts to design the project in such a way that the tax liabilities of the project and its proponents are legally minimized. The study also seeks to assure that all applicable taxes have been provided for in the profitability estimates.

Financing Aspects. The cash requirements and financing leverage of the firm on one hand, and the investment policies of financial institutions on the other, should be thoroughly weighed. The purpose of this is to obtain adequate financing on the most reasonable terms.

Financial Projections. The selection of the management, marketing, technical, and financing specifications is based mainly on their effects on the profitability, cash requirements, and cash generation. Hence the need for the profitability and cash estimates, which are covered in the financial projections.

Profitability. The feasibility study determines the viability desirability, or practicability, of an undertaking. To businessmen, feasibility means profitability.

Profitability is the relationship between the *capital* required to be invested in a project, and the *profit* or *cash dividend* which can be generated by such project. Thus, in the following illustration, Project A is more profitable than Project B:

	Project A	Project B
Capital to be invested	₱500,000	₱2,000,000
Expected net profit per year—all to be paid out as cash dividends	100,000	200,000
Rate of return on investment (ROI)	20%	10%

Profitability is accurately measured by the discounted cash flow method of computing the rate of return on investment. (This is explained in Chapter IV, Volume 2.) The higher is the rate of return, the more feasible, or financially attractive, is the project.

The rate of *return on investment* correlates two sets of figures:

1. The *investment* required by a project; and
2. The *series of cash* which the project can generate and which can be paid out as cash dividend.

The data on the investment required, as well as on the cash generation and dividend payments are obtained from the projected cash flow statement. The cash flow statement, which is similar to, but different from, a cash budget, is constructed by using information from the other parts of the project study. Thus, possible cash receipts from sales shall be supplied by the marketing study. Information on expected cash payments for machinery shall be taken from the technical study. Payment for the compensation of the management team shall be based on the management study. These inter-relationships of the different parts of a project study are shown in Exhibit 1.

Social Desirability. From the viewpoint of government, economic, or social planners, feasibility means social desirability. Thus, a 30-kilometer road, connecting an agricultural country with a shipping port and costing ₱10,000,000 may be considered feasible if the road will result in substantially more production in the area, give more profits to the farmers, and drastically reduce the selling prices of commodities in the consuming areas.

Social desirability is the relationship between the benefit to be obtained from an undertaking (as increase in food production in an area in the above illustration), and the cost of such undertaking (₱10,000,000).

Parties Requiring Project Studies. Studies are prepared for the following parties and purposes:

1. *Managements of going concerns*
    a. To determine the feasibility of expansion programs
    b. To set the reasonable price of an existing business which they are considering to take over.
2. *Proponents or promoters of new projects*
    a. To ascertain the viability of new projects
    b. To select or improve the project specifications in terms of: form of business organization, location, market, distribution channel, plant capacity; sources of financing, and other designs.
3. *Stockholders*
    a. To decide on the sale of existing companies, and if so, to set the selling prices
    b. To find out if an investment in a project or an existing enterprise is attractive.
4. *Lending institutions*
    a. To ascertain the advisability of lending to a new project or existing undertaking
    b. To define the conditions to be imposed in order to safeguard the position of the institution.
5. *Government offices*
    a. To determine if a project is entitled to government incentives
    b. To specify the level of incentives to be granted (if the office has this discretion).

The parties interested in different kinds of projects are:

	Kind of project		
		Existing enterprise	
	New project	With expansion	Without expansion
Project proponent or promoter	x		
Prospective stockholders	x	x	
Present stockholders planning sell out			x
Prospective business buyers			x
Management		x	
Lending institutions	x	x	
Government offices	x	x	x

Limitations of Project Studies. A project study is primarily based on forecasts—forecasts of: demand, prices, new products coming in, technological developments, amendments to laws, changes in tariff rates, sales revenues, costs and expenses, and available financing.

Such forecasts are based on available information, and on the opinion of the party preparing the project study. Thus, the following are the basic limitations of the study:

1. Certain required information are usually not available.
2. The one preparing the study may not be professionally competent, and hence the opinion he forms may be deficient. Professional competence is required in determining what data to obtain, where and how to get the data, how to analyze the data, and how to formulate an opinion on the project based on the analyses.
3. Even assuming all the required data are available, and the one preparing the study is competent, the study is still a forecast. The results of a forecast usually do not tally with the actual events.

Utility of Project Studies. Notwithstanding the above inherent limitations (but assuming the one preparing the study is competent), the project study still offer the advantage of constituting the most realistic basis of calculated action—to implement or abort a project. Hence, project studies minimize the probability of business failures.

Furthermore, the project study is the best medium ever devised up to now which can be used in scientifically designing and redesigning a project so as to enable it to attain the maximum possible degree of profitability based on available resources.

The study also represents the most convenient device wherein an outside organization—a financial institution or government office—may evaluate a new project or an existing company.

Preparation and Revision. A project study should be in a constant state of evolution. After the idea of a project is first considered by a proponent, some rough calculations must be made to ascertain if it is worth pursuing. Then it could be discussed further with associates who may bring out some new ideas as well as some hard facts. If there is a strong indication that the project may be worthwhile, then additional data on the following must be obtained: the raw materials and labor requirements of the project; possible sources and costs of raw materials; and machinery quotations and possible terms of payment. Later, the availability of financing and possible terms must be discussed with financiers.

All along, as negotiations progress, as details of the plans are made, as overall plans or specifications are modified, and as major economic events happen, revisions on the study must be made. It is important to observe that:

1. At any time, the proponents should have a study based on the latest data; and
2. Once the study shows conclusive proof that the project is not feasible, the project should be abandoned at once before further losses or expenses are incurred.

Time and Cost Involved in the Preparation. The time and cost involved in preparing a study vary widely—depending on the type of the industry, the size of the project, the purpose of the study, and the party preparing the study. The study for a souvenir shop to be located in a small rented space in Mabini Street, Ermita, Manila, for instance, may require the time of the proponent for a month. A professional may help for a few days to guide the proponent prepare the study. On the other hand, the study for a huge pioneering complex may take decades. Thus, the study on the pulp and paper mill of the Paper Industry Corporation of the Philippines, which started operations in 1970 was started way back in around 1930.

Several consultants were hired at different times to prepare the study.

The fee to be paid the consultant who shall collaborate in preparing the study for the Mabini souvenir shop will be below ₱5,000. On the other hand, the fees to consultants to undertake the feasibility study, including engineering, for a copper smelter, steel mill, or petrochemical plant can easily exceed ₱5,000,000.

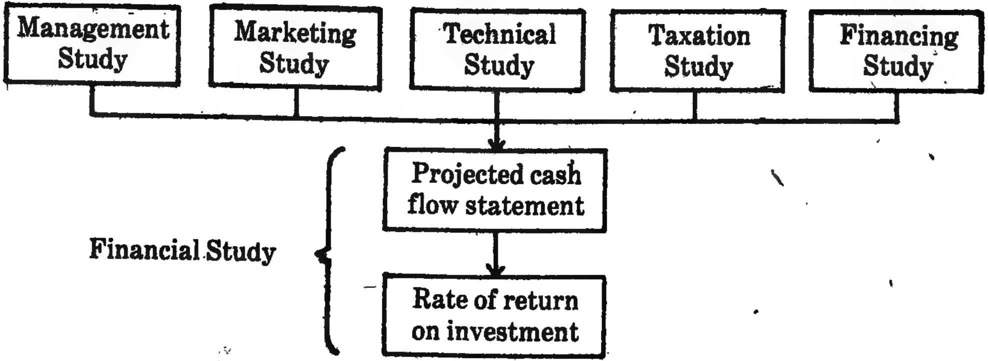
History. Before 1960, the term project feasibility study was virtually unheard of in the Philippines.

In 1961, the World Bank sent a mission to the Philippines to review the lending policies of the government financial institutions. One of the findings was that the institutions were collateral-oriented and not project-oriented. The Program Implementation Agency (PIA), which was organized in 1962 under the Office of the President, took notice of this. (The PIA was subsequently reorganized into the Presidential Economic Staff which in turn was absorbed by the present National Economic Development Authority.)

In 1963, the PIA, together with the then Loans and Investments Council (composed on the Central Bank, DBP, PNB, GSIS and SSS), pioneered in the dissemination of knowledge on project studies thru the holding of seminars on the subject. The last such seminar held by PIA was in 1965. Seven organizations subsequently picked up the idea of conducting seminars on project studies.

Exhibit 1

PARTS OF PROJECT FEASIBILITY STUDY INDICATING THE FLOW OF INFORMATION



NOTE: The rate of return on investment determines the degree of feasibility of a project.

Chapter III

Outlines of Feasibility Studies for Projects in Different Industries

A FEASIBILITY STUDY HAS 2 FUNDAMENTAL PARTS:

1. *Technical* (about the product itself and the means and facilities of producing it)
2. *Economic* (about the costs involved and the profitability of producing the product).

The *economic* portion may be divided into 2 components:

1. *Marketing* (Note: A big market will increase the profitability of the project.)
2. *Financial* (costing, profitability, and financing required).

Thus, the 2 basic parts may be expanded into three:

1. Technical
2. Marketing
3. Financial.

The above essential parts may incorporate other relevant subjects:

the *management* for the project, the supporting organization and personnel, the *tax* and legal aspects, and sources of *financing*. The organization and personnel for production may be covered under the technical part; the sales and promotional staff may be reflected in the marketing portion; and the tax and financing angle may be directly woven into the financial study. Or, alternatively, the management, taxation, and financing aspects may be discussed separately. Hence, the 3 essential parts of a feasibility study may now be enlarged to six:

1. Technical
2. Marketing
3. Management, organization, and personnel
4. Taxation and legal
5. Financing
6. Financial estimates.

The information in the first 5 parts are used in preparing the financial estimates. The financial estimates may be considered as the end result of the feasibility study.

The *financial estimates* are prepared from the viewpoint of the project owners or stockholders. For most purposes, as in making a decision on whether or not to implement a project, the financial estimates can be used as the key basis.

However, in making decisions affecting the Philippine society as a whole, the financial estimates, although helpful, may prove inadequate. Some estimates have to be prepared on the project's impact on the *society* as a whole. The purpose of such "social" estimates is to ascertain the benefits and costs to be derived by the society from a project.

A feasibility study, therefore, may have as many as 7 parts, classified as:

Basic parts

1. Management and organization
2. Marketing
3. Production (technical)
4. Taxation and legal
5. Financing

Terminal parts

6. Financial estimates and analyses (prepared from the viewpoint of *private* parties)

7. Social desirability (prepared from the viewpoint of Philippine *society* as a whole).

Components of Feasibility Studies in General. Shown below are the components of the seven basic and terminal parts of a feasibility study as evolved earlier. The components can be made applicable to almost all projects in almost all industries.

A. *Management, proponents, personnel, and organization*
   1. Management complement and supporting professional firms
      a. During the pre-operating period (project management)
      b. During the operating period
   2. Proponents
      a. Owners
      b. Project originators, promoters, and founders
   3. Personnel or work force
      a. During the pre-operating period
      b. During the operating period
   4. Organization (for the operating period)
      a. Form of business organization
      b. Internal organizational structure
   5. Project implementation timetable.

B. *Marketing*
   1. Demand (customers)
   2. Supply (competition)
   3. Pricing
   4. Marketing program
      a. Distribution channels and sales
      b. Promotions
   5. Projected sales quantity.

C. *Production facilities and product*
   1. Product specifications
   2. Production process
   3. Productive capacity and production schedule
   4. Physical facilities
   5. Production inputs.

D. *Taxation and legal*
   1. Taxation
      a. Tax provisions affecting the industry

    - b. Tax exemptions
    - c. Tax schemes (to be adopted by the project in order to legally reduce its tax liabilities)
  - 2. Legal aspects affecting the project/industry.

E. *Financing* (sources of financing)

F. *Financial estimates and analyses*

  - 1. Financial estimates
    - a. Projected income statement
    - b. Projected cash flow statement
    - c. Proforma balance sheet
    - d. Assumptions, schedules, and computations supporting the above (Items "a" to "c")
  - 2. Financial analyses
    - a. Return on investment
    - b. Sales volume and sales price sensitivity tests.

G. *Social desirability*

  - 1. Specific project contributions to the Philippine economy or society
    - a. Contribution to government revenues
    - b. Contribution to foreign exchange reserves
    - c. Contribution to the growth of related industries (supplier- and consumer-industries)
    - d. Contribution to the Philippine households (ultimate consumers)
    - e. Contribution to the Philippine work force (as technical skills development and monetary compensation)
  - 2. Social rate of return.

The production facilities study (Part C above) vary greatly from industry to industry. For instance, the specific components for a factory and a cattle ranch project are:

Subject	Factory	Cattle ranch
1. Product specifications	Physical, chemical, and other properties of the product	Breed characteristics
2. Production process	Manufacturing process	Calving rate, growing time and

Subject	Factory	Cattle Ranch
		monthly rate of increase in weight, etc.
3. Productive capacity	Plant rated capacity	Maximum possible population (number of heads)
4. Physical facilities	Machinery, buildings, factory site	Pasture land
5. Production inputs	Raw materials and power.	Foundation herd.

Outlines of Feasibility Studies for Projects in Different Industries. The different parts and components of feasibility studies for projects in 9 industries are shown in outline form in the following annexes:

Annex I	Manufacturing
Annex II	Mining
Annex III	Cattle ranch
Annex IV	Coffee plantation
Annex V	Deep-sea fishing
Annex VI	Subdivision
Annex VII	Hotel
Annex VIII	School
Annex IX	Market.

The requirements of business management, as well as of government offices and financial institutions were considered in preparing the above-mentioned outlines.

Efforts were made to make the outlines as comprehensive as possible. However, in the preparation of a project study, care should be exercised in deciding on the specific items to be considered, and on the degree of importance each item should be given. For instance, the study for a project with a total cost of less than ₱100,000 may not be as detailed as the study called for by the accompanying outline. Furthermore, some portions of the outline as presented may be deleted when they have no particular relevance to the project being considered.

New Manufacturing Project
Outline of a Project Study Report

NOTE: IN CASES WHERE A PORTION IN THE OUTLINE FOR A non-manufacturing project (Annex II to IX) is similar to the corresponding part in the outline for the manufacturing project (this Annex), the covering details in the first-named outline are omitted. Thus, since the management aspects of a manufacturing and mining projects are similar, the covering details are omitted in the outline for the mining project (Annex II).

A. Project Summary

1. Brief description of the project
2. Summary of the findings and conclusions regarding the:
    a. Project timetable and status
    b. Management aspects
    c. Marketing aspects
    d. Technical aspects
    e. Taxation aspects
    f. Financing aspects
    g. Financial aspects
    h. Social aspects

B. Project Timetable and Status

Actual or target dates or periods for:

1. General project planning
2. Incorporation

3. Preparation of engineering specifications
4. Building construction
5. Selection of machinery supplier
6. Arrival of machinery
7. Installation of machinery
8. Trial run
9. Start of normal production
10. Start of selling operations

C. Management Aspects

1. Management during the pre-operating period
    a. Project originators
    b. Project promoters; managers
    c. Firms or persons involved or to be involved in marketing, engineering, and other studies
    d. Management during the construction period
2. Management during the operating period
    a. Type of *business organization* (as corporation, partnership), and reason for the choice
    b. *Internal organization*
        1) Statement of functions of each unit
        2) Organization chart
    c. *Owners* - citizenship of owners, and percentage of their respective holdings
    d. *Management personnel* (from the members of the board of directors to the department or section managers)
        1) Duties, and time to be devoted to the project
        2) Requirements
        3) Recruitment
        4) Compensation
        5) Staffing - qualifications (curriculum vitae)
    e. *Labor*
        1) Skills required
        2) Number required for each skill
        3) Sources of labor force for each type of skill (U.S., Metropolitan Manila, etc.)
        4) Recruitment program
        5) Labor training program

      6) Compensation
         a) Prevailing rates
         b) Legal rates
         c) Rates intended for the project—starting rates and provisions for annual increases
      7) Facilities for laborers (housing, transportation, medical and dental care, recreation and other fringe benefits
      8) Effect of labor laws on the above items
   f. *General managers.* if any—arrangements, and fees
   g. *Professional firms* to be hired—law, accounting, engineering, etc.

D. Marketing Aspects (for the Philippine Market Only)

1. *Demand*
   a. Consumption for the past years. (The past period to be covered should be adequate enough to show some trends and to serve as the basis for the projected demand.) The consumption figures may be broken down into:
      1) Regional markets (Ilocos region, Cagayan Valley, etc.)
      2) Types of consumers (as households, restaurants, and hospitals, in case of milk products)
      3) Types of market (as for increase in units, or for the replacement or scrappage market, in the case of motor vehicles) or
      4) Major firm-users (for industrial products, as caustic soda)
   b. Projected consumption for the next five years. Some financial institutions may require that the projections be up to the time of last amortization on the loan applied for.
      1) Quantity, broken down into:
         a) Regional markets
         b) Types of consumers
         c) Types of markets
         d) Major firm-users
      2) Method used and factors considered in preparing the above projections
      3) Comparison of the projections with that of:
         a) Government offices

      - b) Trade associations
      - c) International organizations, as the U. N.
      - d) Other private parties, as management consulting firms

2. *Supply*
   - a. Supply for the last five years—quantity broken down as to source:
     - 1) Imported—further broken down into:
       - a) Form in which the goods are imported (as new fabrics, new clothing, used clothing, remnants, and rags, in the case of textiles)
       - b) Country of origin
       - c) Firm-importers
       - d) Brands
     - 2) Locally-produced—further broken down into:
       - a) Province or region
       - b) Firm-producers
       - c) Brands
   - b. Projected supply for the next five years—quantity, broken down as shown above
   - c. Factors affecting trends in past and future supply
     - 1) Regarding competing products
       - a) Development of new competing products
       - b) Improvement in quality or decrease in cost and in price
     - 2) Regarding importations
       - a) Tax-free importations by certain entities
     - 3) Regarding local production
       - a) Local production capacities (past, present, expansion plans, new projects, modernization plans)
       - b) Percentage utilization of the capacities (based on a given number of shifts a day for a given number of working days a year), considering:
         - (1) Maintenance policies (maintenance may be deferred)
         - (2) Obsolescence or prolonged breakdowns of plant machinery
         - (3) Shipping interruptions
         - (4) Financing available for working capital

3. *Prices*
   - a. Comparison of the following:

        1) Cost of importation
        2) Cost of production of existing firms
        3) Projected cost of production of the project
        4) Importers' and local producers' selling prices
        5) Distributors', wholesalers', and retailers' prices.
    b. Tariff protection assumed or expected for the project
    c. Domestic transportation costs
    d. Effects of the Flag Law
    e. Price to be adopted by the project, and explanation for any difference between this price and the expected future prevailing price in the industry

4. *Marketing program* - (1) present and expected marketing practices of competitors, (2) proposed marketing program for the project, and (3) explanation for any material deviations, covering
    a. Terms of sale (cash, 30 days, etc.)
    b. Channels of distribution, regional location of sales outlets, and transportation and warehousing arrangements, and corresponding costs
    c. Promotions
    d. Packaging

5. *Projected sales quantity*
    a. Expected annual volume (quantity) of sales for the project, considering the demand, supply, prices, and marketing program
    b. Sales contracts, if any

E. Technical Aspects

1. *Product*
    a. Description and specifications of the product, including weight, size, and physical and chemical properties
    b. Principal uses
    c. Tests for the product (prototype)
    d. Assurance that the products will be of the expected quality and quantity
2. *Manufacturing process*
    a. Description of the process, flow chart, and normal duration of the process (Discussions need not be detailed in connection

with applications, if the process is licensed or is a secret)

  b. Proof of reliability and superiority of the process, alternative processes considered, and factors used in determining the process to be employed
  c. Licensing agreement, if any, including terms; reliability of licensor
  d. Processes used in existing plants and in other new projects in the Philippines and abroad
  e. Processes being developed

3. *Plant size and production schedule*

   a. Rated annual and daily plant capacity, at a given number of shifts per day, and number of operating days per year
   b. Desirability of the selected capacity; alternative plant rated capacities considered; minimum economical plant size; factors used in determining the plant size
   c. Provisions made in the location, layout, machinery design and structures, for expansion
   d. Expected annual production volume for the next five years

4. *Machinery* (major, and auxiliary as transport, materials handling, and standby units)

   a. Specifications and functions; rated capacities and balancing; engineering firm which prepared the specifications
   b. Availability of spare parts and repair service
   c. Selection of supplier, including bidding procedures, and evaluation of bids
   d. Quotations from suppliers
   e. Reliability of the suppliers and machinery guarantees
   f. Delivery, payments, and other arrangements with the suppliers

5. *Plant location*

   a. Plant location; location map
   b. Desirability of the location, in terms of distance to sources of raw materials and markets, tie-in with transportation facilities and utilities, weight-bearing capacity of the site, and other factors
   c. Alternative locations considered, and factors used in determining the location

6. *Plant layout*

   a. Description of the plant layout; layout map
   b. Effect of the layout on the materials flow
   c. Treatment of materials handling and storage in the layout
   d. Tie-in with transportation facilities
   e. Provisions for expansion

7. *Structures*
   a. Buildings—area, specifications, and built-in utilities as materials handling and air-conditioning facilities
   b. Other structures as piers
   c. Land improvements—roads within the compound, drainage facilities, fence

8. *Raw materials*
   a. Specifications or description (physical and chemical)
   b. Proof of reliability and superiority of the raw materials selected
   c. Alternative raw materials considered, factors used in selecting the raw materials, and tests made
   d. Raw materials used in other plants in the Philippines and in other countries; new raw materials being studied or developed
   e. Quantity required every year; materials balance
   f. Availability, continuity of supply (specially in case of imported materials), current and prospective sources, and transportation facilities
   g. Supplier—reliability, and arrangements as to delivery and payments
   h. Mineral reserves (as for cement)—adequacy of technical studies on the extent of deposits, and quality
   i. Current and prospective costs of raw materials; terms of any long-term contracts

9. *Utilities*
   a. Electricity, fuel, water, steam and supplies:
      1) Uses
      2) Quantity required
      3) Utilities balance
      4) Availability
      5) Source (in-plant production or any of various possible outside sources)
      6) Reason for the choice of source
      7) Reliability of the source

        8) Alternative sources considered
        9) Cost
    b. Electricity
        1) Maximum or peak power demand in KW
    c. Fuel—average consumption per hour
    d. Water—
        1) Quality required
        2) Average consumption per hour of raw and softened/treated water for process, cooling, sanitary, and general utilities
        3) Water treatment
        4) Storage and distribution
    e. Steam—
        1) Maximum steam demand—pound per hour at specified pressure and temperature
        2) Average steam consumption—pound per hour

10. *Waste disposal*
    a. Description and quantity of the waste to be disposed of
    b. Description of the waste disposal method selected (as by chemical treatment, burning, or further processing to by-products)
    c. Reliability and superiority of the method
    d. Alternative methods considered, and factors used in the selection
    e. Methods used in other plants
    f. Methods being developed
    g. Cost of waste disposal
    h. Clearance from the proper authorities or compliance with legal requirements

F. Taxation Aspects

1. Taxes affecting the project
2. Project design used so that the project will fall under a lower alternative tax rate
3. Tax exemptions to be availed of by the project

G. Financing Aspects

1. *Sources of financing for the project*
    a. Sources selected, for both long-term and short-term financing
    b. Alternative sources considered and factors used in determining the selected sources
2. *Amount and terms of financing for each source selected*
    a. Type of financing (capital stock, loan, etc.)
    b. Use of proceeds (as for machinery, land, etc.)
    c. Currency of financing (pesos, dollars, etc.)
    d. Amount
    e. Security (as collaterals or guarantee)
    f. Repayment period
    g. Interest or dividend rate
    h. Other features
3. *Status of the financing from each source*
    a. Actual releases already made—amounts and dates
    b. Applications already approved, but corresponding funds not yet released—assurance of release of funds, and expected date
    c. Applications pending (not yet approved)
    d. Applications still to be made
4. *Financing of contingencies and seasonal peaks in working capital*
    a. Contingencies—provision made for the financing of contingencies, as overrun in construction costs or delay in start of normal operations
    b. Seasonal peaks in working capital—provision made for the financing of seasonal increases in working capital, as in the case of a project solely oriented to the manufacture of Christmas items

H. Financial Aspects

1. *Major assumptions used,* as on:
    a. Project timetable
    b. Sales volume
    c. Plant capacity
    d. Plant location
    e. Raw materials to be used
    f. Income tax rates
    g. Tariff rates

   h. Tax exemptions to be enjoyed by the project
   i. Foreign exchange rate
   j. General price levels

2. *Financial statements*

   Projected financial statements, with supporting computations and subsidiary assumptions:

   a. Projected income statement
   b. Projected cash flow statement
   c. Projected balance sheet

3. *Financial analyses*
   a. Break-even point
      1) Profit break-even point—volume and selling price
      2) Cash break-even point—volume and selling price
      3) Debt service sales volume
   b. Capital, recovery, and earnings
      1) Cash payoff period
      2) Accounting rate of return
      3) Discounted cash flow rate of return
   c. Others

I. Social Desirability of the Project

1. *Government revenues*
   a. Gross increase in government revenues, in terms of taxes and duties to be paid by the project, during both the pre-operating and operating period.
   b. Decrease in government revenues due to the setting-up of the project, as loss in tariff duties on goods currently imported, but to be subsequently produced by the project
2. *Foreign exchange reserves*
   a. Gross increase in the international reserves in terms of the dollar earnings or dollar savings capability of the project
   b. Decrease in the international reserves, due to the dollar cost of the project, as salaries of foreign technicians, CIF cost of imported raw materials, royalties, cost of imported machinery, and fees to engineering consultants.
3. *Related industries*—development of related industries—other projects which may be developed subsequently to supply the raw materials requirements of the project, or to further process

the products of the project

4. *Consumers*—possible decrease in the retail price of the goods
5. *Employees*
   a. Number of persons to be employed, broken down into local and foreign, and into the various skills required;
   b. Total wage bill (including fringe benefits);
   c. Training of workers
6. *Social rate of return*—discounted cash flow basis

New Mining Project
Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

1. Brief description of the project
2. Summary of the findings and conclusions regarding the:
    a. Project timetable and status
    b. Management aspects
    c. Marketing aspects
    d. Technical aspects—mining
    e. Technical aspects—treatment or concentration
    f. Tax aspects
    g. Financing aspects
    h. Legal aspects
    i. Financial aspects
    j. Social desirability of the project.

B. Project Timetable and Status

Actual dates or periods, or target ones, for:

1. General project planning
2. Incorporation

3. Mining—
   a. Studies on extent and grade of ore reserves
   b. Geologic studies
   c. Preparation of other technical plans and studies
   d. Road construction
   e. Campsite facilities construction
   f. Mine development
   g. Start of mining operations
4. Treatment or concentration—see items B-3 to B-9 in Annex I
5. Start of delivery or selling operations.

C. Management Aspects

D. Marketing Aspects

E. Technical Aspects—Mining

1. *Map* of the property to be developed, showing:
   a. Boundaries, exact location, and accessibility
   b. Topography
   c. Geological features
   d. Existing mine workings and structures
   e. Ore outcrops
   f. Exploration openings
   g. Diamond drill holes
   h. Others
2. *Ore reserves*
   a. Extent of the exploration and development work
   b. Extent (or quantity) of the proven or blocked ores, probable ores, and possible ores
   c. Grade (or quality); cut-off grade of the ore
   d. Shape and altitude of the ore body
   e. Methods of determining the above (b to d), as thru:
      1) Drillings
      2) Samples and tests
   f. Show also covering calculations and maps, parties who made the drillings, samples, and tests, and names of Bureau of

   Mines personnel
- g. Estimated life of the mine.

3. *Geologic studies*

   Geological studies showing the petrological environments, type and origin of deposit, persistency of orebody, geologic structures, and other geologic features. The studies should cover the property to be developed and other properties which might give a clue to the origin, nature, and extent of mineral deposits in the area.

4. *Mining Method*

   Description of the underground or surface mining method, reason for the selection, and alternative methods considered. Copy of mining engineer's report.

5. *Mining program*
   - a. Description of the sequence in which the specific areas are to be developed
   - b. Stockpiling of the mined products in preparation for periodical shipment
   - c. Mine development maps
   - d. Planned capacity of the mines.
6. *Mining equipment* (see item E-4 in Annex I)

F. Technical Aspects—Treatment or Concentration

(See item E of Annex I)

G. Taxation Aspect

1. *Mining taxes involved,* as
   - a. Occupation fee (until lease for the mining claim is granted)
   - b. Rentals and royalties (for mineral lands under lease)
   - c. Ad valorem taxes (may include legal justification for the interpretation of actual market value of the annual gross output of the minerals, which is the basis of the tax)
   - d. Specific taxes (as for coal)
   - e. Forest charges (for the timber to be cut for use in the mining

claim, from land other than the mining claim).

2. *Income tax*
   a. Computations for depletion of ore reserves for income tax purposes—lower of 23% of gross income or 50% of net income before the 1-1/2% mines product tax (RA 2698)
   b. Possible exemption under RA 909.

H. Financing Aspects

I. Legal Aspects

1. *Mineral deposits*

Legal arrangements for the mineral deposits and for the land where the deposits are located (whether or not under lease; perfection of lease or other title). Copies of lease contracts, operating contracts, and sub-lease contracts. History of claims

J. Social Desirability of the Project

Annex III

New Cattle Ranch Project
Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

B. Project Timetable and Status

Actual or target dates or periods for:

1. General project planning
2. Incorporation
3. Preparation of special studies, as on breed selection, feeding techniques, grass species, etc.
4. Land acquisition and survey
5. Construction of physical facilities and land improvements
6. Pasture development
7. Purchase of equipment
8. Acquisition of foundation herd
9. Start of selling operations
10. Start of commercial (full-scale) operations.

C. Management Aspects

D. Marketing Aspects

1. *Consumption—all meat products*
   a. Consumption of meat products for the last ten years, broken down into:
      1) Type of meat products (beef, carabao meat, pork, and poultry)
      2) Type or extent of preparation (fresh, canned or processed)
      3) Region (Ilocos region, Cagayan Valley, etc.)
   b. Projected consumption
      1) Quantity, broken down as shown above
      2) Method used and factors considered in preparing the above projections
      3) Comparison of the projected consumption with the Filipino nutritional meat requirements as set by the Institute of Nutrition.
   c. Other data on consumption
      1) Per capita consumption in the Philippines, in the various regions of the Philippines and other countries.

2. *Consumption—cattle*
   a. Consumption of cattle for the last ten years (in heads and liveweights) broken down into:
      1) Slaughtered for fresh meat
      2) Used by food processing plants.
   b. Consumption of cattle for the next ten years
      1) Quantity, broken down as above
      2) Method used and factors considered in preparing the projections.
   c. Factors affecting the past and future trends in consumption
      1) Setting-up of food processing plants
      2) Price changes for other meat as compared with those for beef.

3. *Consumption—canned beef*

   Consumption of canned beef products (corned beef, corned beef loaf, etc.) for the last ten years, and for the next ten years.

4. *Supply—all meat products*
   a. Supply for the last ten years, broken down into:
      1) Type of meat product
      2) Source

        - a) Imported (broken down further into source-country and extent of preparation—canned, fresh)
        - b) Locally-produced (broken down further into regions).
- b. Projected supply for the next ten years—broken down as shown above.

5. *Supply—cattle*

- a. Supply for the last ten years
    - 1) Importation showing
        - a) Number of heads
        - b) Live weight
        - c) CIF cost
        - d) Country of origin
        - e) Local importers
    - 2) International trade in cattle—major country-exporters and importers, and quantity (heads and/or weight) and prices involved
    - 3) Local production showing
        - a) Number of heads
        - b) Live weight
        - c) Regions wherein raised.
- b. Supply for the next ten years—importations and local production, showing the data called for in a-1) and a-3) above.
- c. Factors affecting trends in past and future supply
    - 1) Regarding importations
        - a) Government policy and import permits granted by the Bureau of Animal Industry
        - b) Setting-up of local beef processing and canning plants
    - 2) Regarding local production:
        - a) Major ranches—owners, location, cattle population, plans for the future
        - b) Importation of improved cattle stock by both the government and private sectors
        - c) Implementation of the government livestock dispersal program (by the Bureau of Animal Industry), and of the Cattle Dispersal Act of 1964 (RA 4069)
        - d) Operations of artificial insemination centers (by the

Bureau of Animal Industry and U.P. College of Agriculture)

- e) Propagation of improved forage grasses (by the Bureau of Animal Industry) .
- f) Implementation of the DBP livestock financing plan
- g) Utilization of agricultural waste products (pineapple pulp and sugar cane tops) as cattle feeds.

6. *Supply—canned beef*

- a. Supply for the last ten years, broken down into:
  - 1) Type of products (corned beef, corned beef loaf, etc.)
  - 2) Source—
    - a) Imported (broken down further into source-country)
    - b) Locally-produced
- b. Projected supply for the next ten years broken down as shown above.
- c. Factors affecting trends in past and future importations
  - 1) Tariff duties

7. *Prices*

- a. Past, present, and expected future prices of live cattle, on a live weight basis:
  - 1) Imported—CIF cost
  - 2) Local—prices in different regions in the Philippines (both on an ex-ranch, and delivered bases).
- b. Past, present, and expected future retail and wholesale prices, on a dressed weight basis.
- c. Price to be adopted by the project on a live weight basis.

8. *Marketing program*

- a. Age at which the steers, defective heifers, and old cows and bulls are to be marketed.
- b. Sales delivery point (ex-ranch, or delivered), and transportation arrangement, if on a delivered basis.
- c. Terms of sale (cash, 30 days, etc.)

9. *Projected sales quantity*

- a. Expected annual volume (number of heads and live weight) of sales for the project, considering the demand, supply, prices, marketing program, and technical capability of the ranch.

E. Technical Aspect

1. *Cattle-raising conditions* and practices in major cattle-producing countries, and in selected ranches in the Philippines
    a. Breeds
    b. Size of ranch (number of heads)
    c. Technical characteristics of the area—temperature, rainfall, topography, soil, vegetation, elevation
    d. Feeding practices and feeds used
    e. Others
2. *Cattle breed(s) for the project*
    a. Description—general
    b. Size—range of, and average, live weight (in lbs.); dressed weight (as a % of live weight); boning yield (raw meat weight as % of dressed weight)
    c. Reason for the choice
    d. Alternative breeds considered
    e. Proof of adaptability to Philippine conditions
    f. Availability of foundation herd, and program of procurement.
3. *Characteristics of the breed(s)* selected for the project—Data on the following for both (1) standard, or current for similar breeds in the Philippines and/or other countries, and (2) prospective for the project, and (3) reason for any variation between the two:
    a. Calves to be born as % of the cow population;
    b. Rate of increase in weight of the cattle (how many kilos for the first six months, the next six months, etc.)—to help determine the age at which they can be most profitably marketed.
    c. Percentage of the total number of steers raised in the ranch, which can be selected as bulls for breeding purposes
    d. Percentage of total number of heifers raised in the ranch, which can be selected as cows for breeding purposes.
    e. Range of age at which the bulls and cows are effective for breeding purposes
    f. Ratio of bulls to cows
    g. Death rate
4. *Size of the ranch* (cattle population)

- a. Expected cattle population of the ranch, classified into calves, yearlings, heifers, steers, cows, and bulls, from the time the foundation herd is acquired, and at the end of every year thereafter for ten years, supported by an annual schedule showing those:
    - 1) Purchased
    - 2) Born
    - 3) Classified from calves to yearlings to heifers, etc.
    - 4) Sold
    - 5) Lost
    - 6) Died
- b. Justification for the size.

5. *Location*
    - a. Description of the location; location map
    - b. Peace and order situation
    - c. Availability of government services in the area
        - 1) Breeding station
        - 2) Diagnostic laboratory for diseases
    - d. Desirability of the location, in terms of distance to
        - 1) Market(s)
        - 2) Communities
        - 3) Land transportation facilities
        - 4) Rivers
    - e. Alternative locations considered and factors used in determining the location.
6. *Area and layout*
    - a. Description of the area
    - b. Technical characteristics of the area—temperature, rainfall, natural water sources, drainage, topography, soil, elevation, presence of harmful minerals, etc.
    - c. Status of the area for the project—legal titles, squatters if any, present vegetation, present usage, past usage, present land improvements (as roads) and physical facilities, etc.
    - d. Proposed area layout
    - e. Development program of various areas, as for improved pasture, etc. in what year
    - f. Provisions for expansion
7. *Physical facilities* and land improvements

    Description and location (show in map) of:

- a. Office building
- b. Ranch houses
- c. Equipment shed
- d. Night and holding corrals
- e. Feeding and watering troughs
- f. Equipment—weighing scale for cattle, transportation units, etc.
- g. Horses
- h. Fences—perimeter and divisional
- i. Roads

8. *Labor*

For the regular (both full-time and part-time), temporary (as for constructing the fence), and consultants:

- a. Skills required
- b. Number required for each skill
- c. Sources of labor force for each skill
- d. Recruitment program
- e. Labor training program
- f. Compensation
    - 1) Prevailing rates
    - 2) Legal rates
    - 3) Rates intended for the project
        - a) Starting rates
        - b) Provisions for annual increases
- g. Ranch area to be used for the raising of subsistence crops for the personnel
- h. Facilities for the laborers (housing, transportation, etc.), and other fringe benefits.

9. *Feeding and pasture* development and maintenance

- a. Selection of basic feeding technique—(1) pasture feeding (2) feedlots, or (3) combination of the two. Reason for the choice
- b. Feeding schedule—type of feeding technique in the morning, afternoon, and evening, for the weanlings, calves, heifers, steers, bulls, pregnant cows, nursing cows, and sick cattle
- c. Roughages and concentrates—kinds to be used, and justification; sources; quantity required
- d. Natural pasture—current vegetation of the area to be utilized as natural pasture; maintenance program
- e. Improved pasture—development and maintenance program

(areas to be developed every year should be indicated in a map); availability of the grass species to be used

f. Fertilizers and limes—kind, specifications, quantity, and application
g. Ratio of pasture area to number of heads (cattle population)
h. Feed supplements and concentrates.

Utilities

Description, and sources of water and power.

Ranch management

a. Cattle breeding and selection
b. Diseases prevention and control
c. Working schedule
    1) Pasture—land preparation, planting, and weeding
    2) Animal management—breeding, castration, branding, and ear-notching, inventory-taking and insecticide-spraying
    3) Repair and maintenance of physical facilities and land improvements.

F. Tax Aspects

G. Financing Aspects

H. Financial Aspects

I. Social Desirability of the Project

New Coffee Plantation Project
Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this Annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

B. Project Timetable and Status

Actual or target dates or periods for:

1. General project planning
2. Incorporation
3. Preparation of special studies as on coffee variety, type of cover crops, etc.
4. Land acquisition and survey
5. Land clearing
6. Planting of windbreakers, cover crops, and temporary shade trees
7. Planting of coffee seedlings, and transplanting
8. First year of harvest
9. First year of commercial harvest.

C. Management Aspects

D. Marketing Aspects

1. *History* of local coffee, raising, and coffee processing plants.
2. *Separate consumption, supply, and price studies for:*
   a) Raw/green coffee
   b) Roasted coffee
   c) Coffee extracts

   The data on local production of raw coffee to cover:

   a) Production in kilos and value in pesos
   b) Number of hectares planted
   c) Yield per hectare
   d) Number of coffee trees
   e) Yield per tree
   f) Number of coffee trees per hectare.

   Furthermore, the effects of the DBP special financing for coffee, and government fertilizer programs under RA 1609 as amended, and other government encouragements on local coffee production, may be considered.

   The importation of coffee in any form is banned by Republic Act No. 2712, which took effect in 1960. However, raw Arabica coffee beans may be imported upon the authorization of the President, in case of a shortage.

3. *Marketing program*
4. *Projected sales quantity*

E. Technical Aspects

1. *Coffee-raising conditions* in major coffee-producing countries, and in selected plantations in the Philippines
   a. Varieties
   b. Size of plantations (in hectares and in number of trees)
   c. Technical characteristics of the area—altitude, temperature, terrain, soil, rainfall, etc.
2. *Coffee variety* for the project
   a. Description

   b. Reason for the choice
   c. Alternative varieties considered
   d. Proof of adaptability to Philippine conditions
   e. Availability of seeds/seedlings, and program of procurement.

3. *Characteristics of the variety selected for the project.* Data on the following for both: (1) standard or current for the same variety in the Philippines and/or other countries, and (2) prospective for the project; and (3) reason for any variation between the two:

   a. Main uses (as for source of aroma and flavor, or for fillers)
   b. Age when:
      1) Initial fruit-bearing starts
      2) Commercial fruit-bearing starts
      3) Fruit-bearing capacity starts to taper off
      4) The tree has to be replaced
   c. Productivity of the tree at various ages (during the fourth year, fifth year, sixth year, etc.)
   d. Time and interval of harvest during the year.

4. *Size*

   a. Size of the project—in number of hectares and in number of trees
   b. Justification for the size (as a mechanized orchard should be much larger than one which is not).

5. *Location*

   a. Description of the location; location map
   b. Peace and order situation
   c. Desirability of the location, in terms of distance to:
      1) Markets
      2) Communities
      3) Transportation facilities (roads, busline, etc.)
   d. Alternative locations considered, and factors used in determining the location.

6. *Area*

   a. Description
   b. Proposed area layout
   c. Characteristics of the area
      1) Altitude

    2) Temperature
    3) Terrain, as sloping (to affect drainage, erosion and extent of mechanization)
    4) Soil
    5) Rainfall—annual quantity (in inches) and distribution (including length of dry season)
    6) Freedom from typhoons and strong winds.
  d. Status of the area for the project—legal title, squatters, if any, present vegetation, present usage, past usage, present land improvements (as roads) and physical facilities, etc.
  e. Provision for expansion.

7. *Area development*

  a. Schedule for (to show sequence and specific areas to be covered at a time):
    1) Land clearing
    2) Planting of cover crops
    3) Planting of either permanent or temporary shade (as banana)
    4) Establishment of a nursery
    5) Planting of coffee seeds
    6) Transplanting of the coffee seedlings.
  b. Availability of, and procurement program for, the seeds or seedlings for the cover crops, shade trees, and coffee
  c. Spacings for the planting/transplanting of seeds/seedlings for the cover crops, shade trees, and coffee; number required per hectare, considering the allowance for replacements.

8. *Physical facilities* and land improvement

Description and location (show in map) of:

  a. Equipment
    1) Tractors and attachments
    2) Pruning knife
    3) Sprayers (power or manual)
    4) Pulping and drying equipment
    5) Transportation units
    6) Shop equipment
    7) Office equipment
  b. Buildings
    1) Office

        2) Residential
        3) Implement shed
        4) Pulping and drying house
        5) Shops
        6) Warehouse
    c. Land improvements
        1) Fence
        2) Roads
        3) Water system and drainage.

9. *Labor*

For the regular (both full time and part-time), temporary (as for harvesting), and consultants:

a. Skills required (for pest control, orchard culture, tractors, etc.)
b. Number required for each skill
c. Sources of labor force for each type of skill
d. Recruitment program
e. Labor training program
f. Compensation
    1) Prevailing rates
    2) Legal rates
    3) Rates intended for the project—starting rates and provisions for annual increases
g. Area to be devoted for the raising of subsistence crops for the labor force
h. Facilities for the laborers (housing, transportation, etc.) and other fringe benefits.

10. *Orchard culture and maintenance*

a. Fertilizers and pesticides—kind, proof of reliability, quantity required, source, and application
b. Pruning
c. Weeding
d. Cultivation
e. Harvesting
f. Storage and handling

F. Tax Aspect

G. Financing Aspects

H. Financial Aspects

I. Social Desirability of the Project

Annex V

New Deep-Sea Fishing Project
Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

B. Project Timetable and Status

Actual or target dates or periods for:

1. General project planning
2. Incorporation
3. Study of fishing grounds and fishing methods
4. Preparation of specifications for boats and gears
5. Acquisition of boats and gears
6. Hiring and training of crew members
7. Start of fishing operations.

C. Management Aspects

D. Marketing Aspects

1. *Consumption-supply-prices of fresh fish for direct use by the public*
   - a. Consumption—past, and expected future, broken down by:
     - 1) Consuming area (Greater Manila, etc.)
     - 2) Fish specie (round scad, anchovies, etc.)

     Other data: Philippine per capita fish consumption as compared with that of other countries.
   - b. Supply (volume of fish)—past and expected future, showing the season of the year, broken down into:
     - 1) Major fishing firms
     - 2) Fishing area
     - 3) Fishing method and boats
     - 4) Fish specie.
   - c. Prices—
     - 1) Past and expected future prices for
       - a. Various consuming areas
       - b. Various fish species
       - c. Every month/season of the year.
     - 2) Price to be adopted by the project, and explanation for any difference between this price and the expected future price for the industry.
2. *Consumption-supply of fresh fish for direct use of fish canneries*
   - a. Consumption-supply (volume of fish)—expected future showing the season of the year, broken down into:
     - 1) Fish canning firm
     - 2) Fishing area
     - 3) Fishing method and boats
     - 4) Fish species
   - b. Data about the fish canneries
     - 1) Ownership
     - 2) Location
     - 3) Fish requirements and canning capacity.
3. *Consumption-supply-prices of sardines and other canned fish products.*
   - a. Consumption—past and expected future, broken down by region (Ilocos region, etc.)
   - b. Supply—past and expected future, broken down by:
     - 1) Importations by commercial firms, or locally-produced
     - 2) Brands

    3) Fish specie used
    4) Specifications (as with or without tomato sauce; size of cans, etc.)
  c. Prices—past and expected future
    1) Wholesale price
    2) Retail price.

4. *Marketing program* (1) present and expected marketing program for the industry, (2) proposed marketing program for the project, and (3) explanation for any material deviations, covering:

  a. Channels of distribution or types of customers/fish dealers
  b. Cold storage arrangements, if any
  c. Point of sale
  d. Terms of sale.

5. *Projected sales quantity*

  a. Expected annual volume (metric tons) of sales for the project
  b. Sales contracts, if any.

E. Technical Aspects

1. *Fish species* for the project

  a. Description
  b. Reason for the choice
  c. Alternative species considered.

2. *Fishing grounds*

  Existing and possible future fishing grounds, either within or outside Philippine territorial waters.

  a. Location and description of the area; location map
  b. Distance to markets
  c. Climatic data
  d. Fish species available
  e. Annual quantity of possible catch
  f. Fishing season
  g. Firms which are already, or which might be, fishing in the area
  h. Firm or government office which conducted surveys on the

area

3. *Fishing grounds for the project*
    a. Location
    b. Reason for the choice
    c. Alternative areas considered

4. *Fishing method*
    a. Fishing method to be adopted (as basnig, purse seining, etc.) and description
    b. Reason for the choice
    c. Alternative methods considered.

5. *Fish handling and transportation method*

    Description, reasons for the choice, and alternative methods considered for:

    a. Method of handling and preserving the catch (as thru the use of ice and tubs, or chilled sea water)
    b. Method of transporting the catch to the markets (as thru the use of fishing boats, or separate carrier boats)
    c. Method of unloading the catch from the boat.

6. *Boats*

    For the (1) fishing boats, (2) carrier boats to be used in transporting the catch to the markets, if the fishing boats will not leave the fishing grounds, and (3) scout boats:

    a. Specifications (capacity, size, materials of construction, etc.); justification for the specifications
    b. Number of units for each type of specifications; justification
    c. Balancing of the capacity of the fishing boats with that of the carrier boats, considering the fish species, expected catch, distance of the fishing grounds to the markets, speed of the carrier boats, etc.
    d. Availability of spare parts and repair service
    e. Supplier—name, reliability
    f. Delivery, payments, and other arrangements with the supplier.

7. *Fishing nets and other equipment*

    Description, quantity required and availability.

8. *Fishing schedule and quantity of catch*
    a. Schedule showing the expected weekly/monthly assignment of the fishing, carrier, and scout boats to various fishing grounds during the year.
    b. Expected catch for different fish species.

9. *Boat and fishing gear maintenance and supplies*
    a. Labor—skills, number required; source, recruitment and training; compensation and subsistence
    b. Boat and fishing gear repair and maintenance
    c. Supply of ice and tubs (if these will be used in the preservation) and fuel.

10. *Port and harbor facilities for fishing boats*
    a. Wharf
    b. Storage house and workshop
    c. Location
    d. Reason for the choice.

F. Tax Aspects

G. Financing Aspects

H. Financial Aspects

I. Social Desirability of the Project

New Subdivision Project
Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

B. Project Timetable and Status

Actual or target dates or periods for:

1. General project planning
2. Incorporation
3. Land surveys
4. Preparation of specifications for streets, drainage systems, etc.
5. Bidding for the development work
6. Land filling/levelling
7. Construction of roads and other improvements and facilities
8. Start of selling operations

C. Management Aspects

1. Management during the planning period
    a. Project originators
    b. Project promoters/managers

  c. Firms or persons involved in the preparation of the marketing, technical, financing, and legal studies.

2. Management during the physical development period.
3. Management during the sales and collections period

   For the management during the (1) sales promotion period, (2) sales operations period, and (3) collection period

   a. Type of business organization (as corporation, partnership), and reason for the choice
   b. Ownership
   c. Internal organization
      1) Statement of functions of each unit
      2) Organization chart
   d. Management personnel (from the members of the board of directors to the department or section managers)
      1) Requirements
      2) Recruitment
      3) Compensation
      4) Staffing—qualifications
      5) Measures taken to ensure expert management during the life of the project.
   e. Professional firms to be hired—law, accounting. engineering, etc.
   f. General managers, if any—arrangements and fees.

D. Region or Area to be Served

1. General description
2. Natural features—size, elevation, soil, climate.
3. Population
   a. Past and expected future population
   b. Population changes—births; deaths; migration
   c. Marriages
   d. Age-groups
   e. Per capital income
4. Economic activities and occupations.

5. Map indicating, among others;
    a. Agricultural and industrial areas
    b. Trading establishments, including markets
    c. Transportation facilities—roads, railroad stations, bus lines, bus stations, piers, airports, navigable rivers
    d. Other facilities as schools and churches
    e. Residential areas, including housing projects.

E. Marketing Aspects

1. *Demand—past and expected future*—as reflected by
    a. Transaction in lots
        1) Sales of subdivision lots
            a) Commercial subdivisions for sale to the public
            b) Company subdivision projects for use by employees of private firms
        2) Sales of other private lots
        3) Conversion of agricultural or idle areas into residential areas
    b. Constructions of buildings
        1) Constructions of buildings by buyers of subdivision lots
        2) Constructions of other private residential buildings
        3) Construction of apartments
    c. Sales or lease of buildings
        1) Sales of units in housing projects
            a) Commercial housing projects
            b) Government-sponsored housing projects
        2) Sales of private residential buildings
        3) Apartments being rented (show also occupany rate)
    d. Housing shortage.

2. *Factors affecting trends in past and future demand*
    a. Population changes and characteristics
    b. Economic activities and occupations
    c. Areas being opened up for residential areas, and subdivisions and housing projects.

3. *Supply expected in the future*
    a. Subdivisions and housing projects (current and proposed)

        1) Owners, locations, description
        2) Number of lots or units, and area
    b. Apartment buildings
        1) Buildings not yet occupied/fully occupied
        2) Proposed buildings
    c. Private residential buildings.

4. *Prices* in other projects

Past and expected future prices of:

- a. Lots in existing and proposed subdivision projects
- b. Units in existing and proposed housing projects.

5. *Marketing program*

(1) Present and expected marketing practices of other subdivisions, and housing projects, (2) proposed for the project, and (3) explanation for any material deviations, covering:

- a. Channels of distribution (whether direct sale to the public, of thru brokers)
- b. Promotional methods
- c. Financing scheme for the sale of lots and tie-ups or arrangements with financial institutions
- d. Terms of sale and interest
    - 1) Downpayment
    - 2) Repayment period
    - 3) Interest rate on unpaid balance
    - 4) Other fees.
- e. Passage of legal title.
    - 1) Title to pass to the buyer at once, but with the lot to be mortgaged to the subdivision project
    - 2) Title to pass to the buyer upon full payment of the sales price

6. *Lot classifications and prices*

Classifications of individual lots in the project (as to area; location in relation to streets, facilities, and others; and elevation), and corresponding prices.

7. *Expected lot buyers/tenants*

- a. Current residences
- b. Employment connections

   c. Range of annual income
8. *Projected sales quantity*
   a. Expected annual volume (number of lots by type) of sales for the project, considering the demand, supply, prices, and marketing program
   b. Sales contracts, if any, and parties who have shown interest.

F. Technical Aspects

1. *Permits and title*
   a. Government permit for the subdivision
   b. Conformance with zoning regulations
   c. Legal title for the area to be developed.
2. *Location*
   a. Location map
   b. Desirability of the location, in terms of
      1) Distance to:
         a) Other residential areas (including other subdivisions and housing projects)
         b) Places of employment (commercial and industrial areas)
         c) Transportation facilities—highways/roads, bus lines and bus stations, jeepney lines and taxi service
         d) Other facilities—schools, churches, markets, hospitals, etc.
      2) Availability of water and electric power
      3) Freedom from noise, smoke, odor, and dangerous gases
      4) Relative freedom from floods
      5) Sanitation
      6) Peace and order situation
      7) General environment.
3. *Area*
   a. Description of the area
   b. Technical characteristics of the area—drainage, elevation,

soil, etc.

c. Status of the area—squatters if any, present usage, present land improvements and physical facilites.

4. *Development plan*

   a. Proposed elevation
   b. Filling and grading required
   c. Proposed layout, showing among others:
      1) The division of the residential area into individual lots
      2) Areas reserved for commercial establishments, schools, churches, playgrounds, golf course
      3) Streets and street lighting system
      4) Drainage system
   d. Total area distribution
      1) Area for each of the following, and % of total area:
         a) Residential area
         b) Commercial area
         c) Market
         d) Church
         e) School
         f) Playground
         g) Streets
         h) Open spaces.
      2) Conformance of above distribution (as area for open spaces as a % of the total area) with minimum standards, or requirements in government regulations
   e. Area of individual lots
      1) Area of individual residential lots
      2) Conformance of minimum area of residential lots with government regulations
   f. Specifications of streets and other improvements:
      1) Specifications of streets, curbs and gutters, drainage system, sewage system, water and power distribution systems, and other improvements and installations
      2) Conformance of the specifications with minimum standards or requirements in government regulations.

Area development

a. Schedule for the area physical development (grading, filling, construction of streets, curbs and gutters, rip-rapping, etc.)—or what are going to be developed when
b. Role of the following in the development:
   1) Contractor
   2) Engineering staff of the project management
   3) Engineering consultants
c. Reliability and lines of specialization of the above parties, and terms of contracts with them
d. Climatic conditions affecting the area development
e. Development crew—availability, and payments
f. Development equipment (graders, bulldozers, concrete mixers, etc.)—availability and payments
g. Facilities during the development period (lighting for night work, water and housing)—provisions made.

6. *Establishment of facilities*

Establishment of markets, schools, playgrounds, and other facilities in the subdivision—arrangements with the operators, and with the subdivision tenants.

7. *Power and water* systems and supply

Arrangements with the power and water suppliers, and with the subdivision tenants.

8. *Subdivision maintenance*

Provision for the maintenance of the streets, playgrounds, and other facilities.

G. Tax Aspects

H. Financing Aspects

I. Financial Aspects

J. Social Desirability of the Project

Annex VII

New Hotel Project in the Greater Manila Area

Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

B. Project Timetable and Status

Actual dates or periods, or target ones, for:

1. General project planning
2. Incorporation
3. Land acquisition and grounds development
4. Preparation of building specifications
5. Building construction
6. Furnishings
7. Start of normal operations.

C. Management Aspects

D. Marketing Aspects

- a. Demand for the past years
    - 1) Foreigners
        - a) Annual number of arrivals in the Philippines, broken down by source-country, mode of transportation (air or sea), purpose of travel (business, pleasure, etc.), length of stay; seasonal variations in the arrivals
        - b) Annual number of visitor-days in the Philippines, broken down by place of stay (hotels, on board ship, etc.).
    - 2) Local guests—annual number of guest-days in the hotels (number of guests multiplied by the average length of stay in days).
- b. Demand for the next five years
    - 1) Foreigners
        - a) Annual number of arrivals in the Philippines, broken down by source-country, mode of transportation, purpose of travel, length of stay; seasonal variations in the arrivals
        - b) Annual number of visitor-days in the Philippines, broken down by the place of stay
    - 2) Local guests—annual number of guest-days in the hotels
    - 3) Method used, and factors considered, in preparing the projected demand by both foreigners and local guests
    - 4) Comparison of the projections with that of:
        - a) Government offices, as the Department of Tourism
        - b) Private parties.
- c. Factors affecting trends in past and future demand
    - 1) Foreigners
        - a) International airlines and oceanliners serving Manila, number and frequency of trips, places of origin and destinations, and plane and liner capacities
        - b) International conferences in Manila
        - c) Development of local tourist spots and facilities
    - 2) Local guests—conventions or conferences in Manila.

2. *Supply*

- a. Current supply of hotel rooms and beds
- b. Projected supply of hotel rooms and beds

   c. Competition offered by first-class apartments (for foreigners)
   d. For the other hotels, and first-class apartments (present, expansion plans, and proposed):
      Past, current, and/or expected:
      1) Location
      2) Rooms—types and number
      3) Room occupancy rate
      4) Facilities available (as restaurant, cocktail lounge, shops, offices, swimming pool, car rental, and laundry).

3. *Room rates*

   a. Present and expected future rates for various types of rooms of other hotels (present and proposed)
      1) Single
      2) Double
      3) Suite
   b. Present and expected future rates for similar rooms in other cities in the Far East
   c. Present and expected future rates of first-class apartments in the Philippines
   d. Room rates to be adopted by the project, and justification.

4. *Promotional program*—(1) present and expected promotional program of competitors, (2) proposed promotional program for the project, and (3) explanation for material deviations, covering the following areas:

   a. Tie-ups with other hotels, local or foreign
   b. Tie-ups with travel agencies, tourism firms, and similar organizations
   c. Tie-ups or arrangements with prospective guests, or persons who might bring in guests
   d. Posters at the Manila International Airport and South Harbor
   e. Promotional activities.

5. *Projected room occupancy*

   a. Expected annual number of guest-days for the various types of rooms, considering the demand, supply, room rates, and promotional program.

E. Technical Aspects

1. *Location*
   - a. Location map
   - b. Desirability of the location, in terms of:
     - 1) Distance to
       - a) Other hotels and restaurants
       - b) Business and shopping centers
       - c) Recreation and tourist spots
       - d) Embassies
       - e) Manila International Airport, and South Harbor
     - 2) Availability of transportation facilities
     - 3) Availability of water
     - 4) Freedom from noise, smoke, odor
     - 5) Sanitation
     - 6) General environment
     - 7) Weight-bearing capacity of the area
   - c. Alternative location considered, and factors used in determining the location.
2. *Grounds*
   - a. Land area
   - b. Layout
   - c. Development plans—interior roads, parking, landscaping.
3. *Building*
   - a. Specifications, and materials
   - b. Number of floors
   - c. Height of buildings allowable in the area
   - d. Total floor area
   - e. Layout by floor and by room
   - f. Air-conditioning system
   - g. Elevators
   - h. Name and qualifications of the architect
4. *Building Construction*
5. *Rooms*
   - a. Description, type, and justification
   - b. Justification for the total number of rooms
6. *Facilities*

   a. Restaurant/dining room
   b. Ballroom/cocktail lounge
   c. Convention halls
   d. Beauty and barber shops, dress shop
   e. Gift, souvenirs, and flower shop; drug stores
   f. Newsstand
   g. Airline, travel agency, and tour offices
   h. Post office, cable service, overseas phone service
   i. Car rental; parking space
   j. Swimming pool
   k. Laundry service
   l. Secretarial service.

7. *Labor*

F. Tax Aspects

G. Financing Aspects

H. Financial Aspects

I. Social Desirability of the Project

1. Relation of the project to the country's economic, social, cultural, and political development
2. Prestige value to the Philippines
3. Net dollar earnings
4. Employment
5. Government revenues
6. Effect on the development of industries catering to foreign tourists (as manufacture of handicraft for souvenirs), and tourism spots
7. Profit to the project investors
8. Social rate of return.

New School Project Outside of the Greater Manila Area

Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

1. Brief description of the project
2. Summary of the findings and conclusions regarding the:
    a. Project timetable and status
    b. Region or community to be served
    c. Management aspects
    d. Marketing aspects
    e. Academic specifications
    f. Technical aspects
    g. Financing aspects
    h. Financial aspects
    i. Social desirability of the project.

B. Project Timetable and Status

Actual or target dates or periods for:

1. General project planning

2. Securing of permit from the Department of Education and Culture
3. Incorporation
4. Building construction
5. Start of first enrolment.

C. Region or Community to be served

1. General description
2. Natural features—size, climate
3. Economic activities
4. Population and occupations
5. Social attitudes
6. General levels of literacy
7. Map indicating, among others:
    a. Business centers
    b. Residential areas
    c. Existing schools
    d. Transportation facilities.

D. Management Aspects

1. Type of organization
2. Ownership (private, public, religious group, foundation, etc.)
3. School organization
4. Management personnel (board of trustees and administrator)
5. Administrative personnel
6. Tie-ups with outside groups as foundations, management firms, or trade associations.

E. Marketing Aspects

1. *Enrolment* (demand)
    a. Semestral enrolment in the region for the last five years, broken down into:
        1) Level of education (first year high school, second year

high school, first year college)
    2) Field of concentration for school (academic, vocational)
    3) Field of concentration for college (law, medicine)
    4) Type of students (working or professional).

b. Projected enrolment in the region
    1) Enrolment broken down as above
    2) Method used, and factors considered, in preparing the projections
    3) Comparison of the projection with those of government offices or private parties.

c. Factors affecting the trends in the past and future enrolment in the region
    1) Population—total and distribution by age groups
    2) Economic activities and occupations
    3) Needs for manpower of various skills
    4) Housing developments
    5) Social attitudes
    6) Calamities—floods, typhoons, etc., especially during enrolment time.

2. *School system* (supply)

a. Present, expansion plans, and new additions, to the school system in the region
    1) Schools
    2) Levels of education
    3) Fields of concentration
    4) Enrolment
    5) Size of class
    6) Academic standards
    7) Location with respect to residential areas, business centers, accessibility, and environment
    8) Management
    9) Physical facilities

b. Local, provincial, or national government programs for development of schools in the area.

c. Expected maximum enrolment of schools, considering the limitations as to:
    1) Physical facilities
    2) Teaching staff
    3) Maintenance of academic standards.

3. *Tuition and Other Fees*
    a. Present and expected tuition and other fees charged by the schools at various levels of education and fields of concentration
    b. Tuition and other fees to be adopted for the project.

4. *"Selling points"*

    "Selling points" of the proposed school, and existing and other proposed schools in the same level of education or field of concentration, with respect to:

    a. Location
    b. Physical facilities
    c. Qualifications of the members of the teaching staff.

5. *Expected enrolment for the project*

    Expected enrolment for the project, considering the past and expected future enrolment, school system, tuition and other fees, and selling points.

F. Academic Specifications

1. *General*
    a. Relation of the project to the other educational facilities in the region
    b. Level of education and field of concentration
    c. Method of instruction
    e. Enrolment per class
    f. Entrance requirements.

2. *Faculty*
    a. Qualifications
    b. Source/availability
    c. Recruitment
    d. Development program, as fellowships, seminars, and training programs
    e. Compensation
    f. Housing, if any
    g. Teaching loads
    h. Outside work connections.

3. *Arrangements with students*
    - a. Loans
    - b. Scholarships
    - c. Books

G. Technical Aspects

1. *Location*
    - a. Location map
    - b. Desirability of the location in terms of:
        - 1) Distance to
            - a) Other educational facilities
            - b) Residential and business area
            - c) Transportation lines
        - 2) Availability of water
        - 3) Freedom from noise, smoke, odor
        - 4) Sanitation
        - 5) General environment
    - c. Alternative locations considered, and factors used in determining the location.
2. *Grounds*
    - a. Land area
    - b. Layout
    - c. Development plans—interior roads, parking, landscaping.
3. *Buildings*
    - a. Specifications and materials with special reference to lighting, ventilation, and noise limitations
    - b. Total floor area
    - c. Layout by floor and by room
    - d. Space per student
4. *Building construction*
5. *Equipment and furnishings*
6. *Facilities*
    - a. Dormitory
    - b. Meetings or convention halls
    - c. Library

- d. Cafeteria
- e. Clinic
- f. Laboratory
- g. Gymnasium

H. Financing Aspects

1. *Financing requirements during the pre-operating period*
    - a. Surveys and studies
    - b. Initial administration
    - c. Physical facilities
2. *Financing requirements during the operating period*
    - a. Compensation of faculty members and other personnel
    - b. School supplies
    - c. Buildings and grounds maintenance
    - d. Additional equipment.
3. *Sources of financing during the pre-operating period*
    - a. Government funds (for government projects)
    - b. Owner's funds (for private projects)
    - c. Investment by other organizations
    - d. Loans
4. *Sources of financing during the operating period*
    - a. Government funds
    - b. Funds from other organizations
    - c. Tuition and other fees.

I. Financial Aspects

J. Social Desirability of the Project

1. Increase in the levels of literacy
2. Increase in the rate of development of industries to be served
3. Employment
4. Community development

New Privately-Owned Market Project

Outline of a Project Study Report

NOTE: WHERE THE DETAILS OF THE STUDY FOR THIS industry are similar to the details for the manufacturing industry, the covering details are omitted from this annex. The reader is therefore requested to consult the outline for the manufacturing industry in Annex I.

A. Project Summary

B. Project Timetable and Status

Actual or target dates or periods for:

1. General project planning
2. Granting of permits
3. Preparation of building specifications
4. Building construction
5. Start of normal operations.

C. Management Aspects

D. Region or Community to be Served

1. *General description*
2. *Natural features*—size, elevation, soil, climate

3. *Population*
    a. Population growth; migrations
    b. Number of households
    c. Per capita income
    d. Social attitudes
    e. Buying habits.
4. *Economic activities and occupations*
5. *Map* indicating, among others:
    a. Agricultural areas
    b. Industrial establishments
    c. Trading establishments
    d. Residential areas
    e. Transportation facilities—roads, railroad station, bus lines, bus stations, piers, navigable rivers, shorelines.

E. Marketing Aspects

1. *Demand and supply*
    a. Agricultural, fisheries, or industrial establishments which are selling their outputs direct to the public
        1) Description of the leading establishments
            a) Location
            b) Ownership
            c) Products handled, and pricing
            d) Characteristics of the customers
        2) Reason why they are selling their products direct to the public
        3) Estimated annual volume of sales handled (peso value, and quantity by major commodities)—past, current, and expected in the future.
        4) Estimated annual volume of sales which may be handled thru the market project.
    b. Trading establishments (procuring their merchandise either within, or outside of, the region), other than markets
        1) Description of the leading establishments
            a) Location
            b) Ownership

      - c) Products handled, and pricing
      - d) Characteristics of the customers
    - 2) Estimated annual volume of sales handled (peso value, and quantity by major commodities)—past, current; and expected in the future
    - 3) Estimated annual volume of sales (for the future) which may be handled thru the market project.
- c. Existing markets (public and private)
    - 1) Location
    - 2) Ownership
    - 3) Products handled, and pricing
    - 4) Characteristics of the customers
    - 5) Characteristics of the stallholders
    - 6) Fees being charged, in addition to rentals of stalls
    - 7) Occupancy rate
    - 8) Pending applications for stalls
    - 9) Physical facilities—condition and specifications of the buildings and installations; parking lots; number of stalls; size and description of the individual stalls
    - 10) Facilities offered—security, water
    - 11) Estimated annual volume of sales handled (peso value, and quantity by major commodities)—past, current, and expected in the future
    - 12) Estimated number of current stallholders who may transfer to the market project.

2. *Plans for the project*
    - a. Commodities to be handled
    - b. Types of tenants to be given preference
    - c. Method of collecting the rental; and terms of payment (advance, end of the month, etc.).

3. *Pricing*
    - a. Monthly rental charged by existing markets and to be charged by the market project, for stall with the same/similar:
        - 1) Location within the market
        - 2) Size
        - 3) Commodity handled
        - 4) Technical specifications (construction materials used, design, facilities)

Explanations for significant variations between the rentals charged by existing markets, and those to be charged by the project.

b. Other fees, as for light and water.

4. *Projected number of stalls to be occupied*
   - a. Expected annual number of stalls to be occupied
   - b. Current classification of prospective stallholders:
     - 1) Agricultural, fisheries, and industrial establishments which are currently selling all their output direct to the public
     - 2) Current trading establishments
     - 3) Current stallholders in existing markets
     - 4) Others (new)
   - c. List of prospective stallholders who have already signed up, or shown their interest.

F. Technical Aspects

1. *Government permit*

Certification from local authorities permitting the establishment of the proposed market.

2. *Location*
   - a. Location map
   - b. Desirability of the location, in terms of:
     - 1) Distance to
       - a) Agricultural areas
       - b) Industrial establishments
       - c) Trading establishments
       - d) Residential areas
       - e) Commercial, savings, and rural banks
       - f) Existing markets
       - g) Transportation facilities (main roads or streets; railroad station; bus lines and bus stations; piers; navigable rivers; shorelines)
       - h) Fire fighting facilities
     - 2) Availability of water
     - 3) Freedom from smoke

    4) Sanitation
    5) Peace and order situation
    6) General environment.

3. *Grounds*
    a. Land area
    b. Layout
    c. Development plans—parking
    d. Elevation
    e. Provisions for expansion

4. *Building design*
    a. Specifications and materials, with special reference to sanitation, flow of customer traffic, ventilation, lighting, fire prevention and control, and general safety
    b. Total floor area
    c. Layout
    d. Water, electrical, and waste disposal systems
    e. Stalls—total number; size; facilities
    f. Provisions for expansion.

5. *Building construction*

6. *Market operations*
    a. Personnel required for the operation of the market (collectors, guards, janitors), and for the maintenance of the physical facilities.

G. Financing Aspects

H. Financial Aspects

I. Social Desirability of the Project

1. *Convenience of the buying public and of the stallholders*
2. *Employment*
    a. During the construction period
    b. During the operating period

    1) For stallholders
    2) For the market operations personnel.

3. *Increased government revenues*
    a. Taxes/licenses to be paid by the market project
    b. Taxes/licenses to be paid by the stallholders
    c. Increase in taxes to be paid by agricultural and industrial firms with expanding markets
    d. Increase in the real estate taxes due to increase in the market value of real estate in the vicinity of the market project.
4. *Development of related industries*
    a. Manufacturing (including cottage industries) and agricultural firms which will have additional market facilities
    b. Transportation firms.
5. *Profit of the project proponents.*

Chapter IV

Management Study

THE BASIC AIM OF THE MANAGEMENT STUDY IS TO have an effective organization which will help carry out the objectives of the project proponents. The study encompasses the organization for the preoperating period as well as for the actual commercial operations. For the commercial operations, the study guides the proponents in:

1. Selecting the appropriate form of business organization;
2. Effecting the required Filipino ownership of the organization;
3. Designing the internal structure of the organization; and
4. Staffing the internal structure.

A. Pre-Operating Period

A potent project organization is a valuable asset from the conception of a project through the pre-operating period up to the start of normal operations. The organization will be charged with the accomplishment of activities which will enable the project to start its normal operations within the most reasonable period, and within the budgeted costs. These activities range from the preparation of studies to the factory trial run. Some of the activities may be done by the project organization itself while others are better done by outside consultants.

So that the project management may be properly geared to execute the project activities, the activities are described below. Project construction and scheduling are emphasized.

1. PROJECT ACTIVITIES

During the pre-operating period, a number of studies and decisions have to be made. The distribution channels, plant capacity, manufacturing process, and sources of financing, have to be determined.

Dealings with certain government offices have to be made. An application for revisions in the tariff duties may be made with the Tariff Commission. Likewise, an application for possible tax exemptions may be filed with the Board of Investments, or the Bureau of Mines. Long-term financing may be obtained from government financial institutions or private sources.

As to the physical facilities, negotiations for the construction of buildings and acquisition of the plant site and machinery have to be made. The specific roles of the following parties in the engineering studies and in the actual construction work have to be defined: machinery supplier, product licensor, contractor, engineering consultants, and engineering staff of the project. The roles should be based on the requirements of the project on one hand, and on the reliability and lines of specialization of the parties on the other. Contracts with them will have to be drawn.

A list of the major activities for a manufacturing project, from project conception up to the start of normal operations, is shown below:

Management Aspects

1. Conception and identification of the project;
2. Preparation of the project study;
3. Decision on whether or not to carry out the project;
4. Organizing the promoters or original investors;

5. Determination and hiring of firms/persons to prepare: engineering specifications, marketing program, etc.;
6. Selection and hiring of top management personnel, or general managers;
7. Incorporation;
8. Recruitment and training of company personnel.

Marketing Aspects

1. Determination of:
    - a. Distribution channels
    - b. Promotional activities
    - c. Terms of sales.
2. Formulation of pricing policies
3. Study of the marketing organization
4. Start of selling operations.

Technical Aspects

1. *General*—
    - a. Determination of:
        - 1) Plant capacity;
        - 2) Plant location;
        - 3) Manufacturing process;
        - 4) Plant layout;
        - 5) Waste disposal method.
    - b. Tests for the product (prototype)
    - c. Arrangements with the licensor.
2. *Plant site*—
    - a. Acquisition;
    - b. Grading;
    - c. Construction of land improvements as roads, fences, etc.
3. *Buildings* and other structures—
    - a. Preparation of specifications;
    - b. Construction.
4. *Machinery*—
    - a. Preparation of specifications;
    - b. Preparation and sending out of invitations to bid;
    - c. Prequalification of bidders;
    - d. Examination of bids;

- e. Award of bid;
- f. Negotiation of contract;
- g. Fabrication of machinery;
- h. Receipt of machinery:
- i. Installation of machinery.

5. *Raw materials* and *utilities*—
   - a. Determination of the raw materials to be used;
   - b. Determination of the sources of materials and utilities;
   - c. Arrangements with the suppliers;
   - d. Delivery of initial batch of raw materials.

6. *Operations*—
   - a. Trial run period;
   - b. Start of normal manufacturing operations;
   - c. Start of manufacturing operations at full capacity.

Taxation Aspects

1. Study of the form of business *organization* and business arrangements which will give the project the most advantageous tax position;

2. Study of the tax *exemptions* which may be availed of by the project;

3. Filing of applications for, and following through:
   - a. Tax exemptions as under the Investment Incentives Act, Export Incentives Act, or Tourism Industry Investment Incentive Program; and
   - b. Revisions in the rates of tariff duties, and/or imposition of countervailing and dumping duties.

Financing Aspects

1. Determination of the amount of financing required;
2. Survey of possible sources of financing;
3. Sounding out of prospective investors, both stockholders and creditors, and preliminary negotiations;
4. Preparation of formal documents (prospectus, project studies, application forms), and filing of applications;
5. Follow-up of financing applications;
6. Fulfillment of conditions precedent required by the financiers;
7. Receipt of funds from the financiers;

8. Payment for—
    a. Plant site;
    b. Building;
    c. Machinery.

2. PROJECT CONSTRUCTION

The climatic conditions and site accessibility have to be considered in scheduling: the leveling of the land; construction of roads, bridges, piers, buildings and other structures; and installation of the machinery.

If the work will be done by the project administration, the availability of a construction crew has to be reckoned with. Temporary housing for the workers will have to be provided for.

The availability of construction materials should be studied in advance. The shipment of cement and steel structures to the site may present some problems. Furthermore lumber may not be available. The construction materials should not only be for the permanent structures and land improvements but also for the temporary structures, like scaffoldings and housing for the crew.

The availability of construction equipment should also be checked. This is quite important as some of them may have to be imported.

3. PROJECT SCHEDULING

Project scheduling refers to the identification and analysis of the activities—from the project planning stage up to the start of normal operations. The purpose of scheduling is to:

a. Determine the probable starting time of normal operations;

b. Pinpoint to the management the activities which should be expedited so that the starting time of the normal operations may be advanced; and

c. Pinpoint to the management the dates when certain phases of the construction work should be completed, and when the construction materials should be made available.

Either a Gantt Chart or the Program Evaluation and Review Technique (PERT) may be used.

Gantt Chart. A simplified Gantt Chart is illustrated in Exhibit

1. It presents the estimated period required to accomplish the various activities.

The chart as presented is based on the following:

Activity	No. of months
1. Obtaining of financing	7
2. Plant site acquisition	5
3. Building construction	6
4. Machinery supplier selection	2
5. Order and receipt of machinery	12
6. Machinery installation	3
7. Materials supplier selection	1
8. Order and receipt of materials	2

In the construction of the Gantt Chart, it was assumed that:

1. The plant size and location have been determined already. However, the machinery and materials suppliers have not yet been selected.
2. The financing to be obtained will be only for the acquisition of the plant site which will be for cash.
3. The building has to be completed before the machinery may be installed.

PERT. This is a more involved way of scheduling. It attempts to determine:

1. The activities which can be done simultaneously;
2. The activities which should precede the others; and
3. The activities, the performance of which should be hastened if the target date for the start of normal operations is to be advanced.

The activities earlier listed were plotted in a PERT network as shown in Exhibit 2—Original Project Schedule. It may be noted from the Exhibit that:

1. The following activities can be done simultaneously:
   a. Obtaining of financing;
   b. Machinery supplier selection; and
   c. Materials supplier selection.
2. The obtaining of the financing must precede the plant site

acquisition, which in turn must precede the building construction, etc.

3. The time required for the completion of the 3 paths is as follows:

A-B-C-D-E path:

A-B - 7 mos.
B-C - 5
C-D - 6
D-E - 3
Total 21 mos.

A-F-D-E path:

A-F - 2 mos.
F-D - 12
D-E - 3
Total 17 mos.

A-G-E path:
A-G - 1 mo.
G-E - 2
Total 3 mos.

4. The time required for the completion of the project is 21 months, which is the length of the longest, or the critical path, A-B-C-D-E.

5. Any change in the schedule of the A-B-C-D-E path will affect the target date for the completion of the entire project.

The PERT network will point out to the project management the importance of taking some steps to hasten the performance of the activities in the critical path so that the over-all project completion date may be advanced. The application of PERT on the specific activities, such as building construction and machinery installation may hasten the completion of these activities as follows:

	From	To
Building construction	6 mos.	4 mos.
Machinery installation	3	2
Total	9 mos.	6 Mos.

Thus, a savings of three months will be made. This will shorten the over-all project implementation work from 21 to 18 months. The new time requirements will be:

Path ABCDE	-	18 mos.
Path AFDE	-	16
Path AGE	-	3

The improved project schedule is also shown in Exhibit 3.

B. Form of Business Organization

The form of business organization for the normal operations of the project should be the one that will further the objectives of the proponents. The major objectives are:

1. Control of the management
2. Attrraction of financing
3. Maintenance of good business relations
4. Protection of business secrets
5. Increase in profit through avoidance of taxes
6. Limitation of liabilities of owners.

With the above objectives, the proponents may select any one of the following alternative forms:

1. Single proprietorship
2. Partnership
3. Cooperative
4. Corporation.

If the corporate form is used, the project may be under any one of (Exhibits 4 and 5):

Alternative 1 - Existing corporation
Alternative 2 - New subsidiary
Alternative 3 - New independent corporation
Alternative 4 - New sister corporations.

Management Control. Of the alternative arrangements under a corporate set-up listed above, Alternative 2 provides the situation wherein the project promoter (Mr. X in Exhibit 6) can control the project (Project B) with the minimum capital investment. Assume, for instance, that Project B needs a total financing of ₱7,000,000, with ₱2,800,000 required to be in common shares. Assume also that Mr. X currently controls Corporation A up to say 53%, and that this corporation has no more borrowing capacity. What Mr. X can do is put up ₱800,000 in Corporation A, and invite the other stockholders to invest an additional ₱700,000 in the corporation (see Exhibit 6). The ₱1,500,000 thus raised can be invested by Corporation A in Corporation B. The minority stockholders may put in ₱1,300,000 in Corporation B. Under this scheme, Mr. X can still control Corporation B, through Corporation A, by investing ₱800,000 only, or about 11% of the total requirement of ₱7,000,000.

However, if Alternative 1, 3 or 4 is adopted, Mr. X has to put up at least ₱1,500,000 (about 54% of the ₱2,800,000 minimum capital stock) so that he can control Project B.

As far as controlling the management is concerned, adopting a cooperative will be most inadvisable. This is because all the members have equal voting power irrespective of the amount of their individual capital contributions. Thus, the project promoter, with only one vote, will find it difficult to control the management. It is for this reason, among others, that before the Government Service Insurance System invested in the Union Workers' Industrial Cooperative, Inc. which was a cooperative, the GSIS required that the UWICI be reorganized as a corporation. (Note: the UWICI operated the NDC textile mill located in Pureza, Sta. Mesa, Manila.)

Financing. Generally, a corporate form is preferable to the other forms as far as obtaining financing from outside groups is concerned. The reasons are:

1. Lenders prefer to finance a corporation because of the long period of legal life. A partnership, for instance, may be dissolved by the withdrawal of any partner, while a corporation is not dissolved by the selling out of a stockholder's interest.
2. Investors prefer to finance a corporation because of the facility with which their interest in the corporation can be sold, specially if the shares are listed in a stock exchange.

Business Relations. If the current operations of the firm are based in Manila, and a new project in the provinces is desired, it may be advisable for the promoter to set up a new corporation for the proposed project. This arrangement has two advantages. First, the promoter will be able to control the new project through a manager whom he can appoint. Second, the local board members, who are the minority stockholders, will be able to help in building the goodwill of the firm, in dealing with local government officials and bankers, and in mapping out operational strategies. This is due to their established reputation, contacts, and knowledge of the local conditions. It is for these reasons that, in expanding its operations to the provinces, one Manila-based financing firm set up new corporations rather than branches.

Business Secrets. One advantage of setting up a new corporation for a new project (Alternative 3 or 4) over that of having the new project placed under an existing corporation (Alternative 1) is that in the former case, the new stockholders cannot interfere in the operations of the existing project. In the latter case, if new stockholders are taken to finance the new project, they may be informed on the business secrets not only of the new project but also of the existing one.

Taxes. The income tax liability of a project may be affected by the form of business organization as well as the specific corporate arrangements (Alternative 1, 2, 3, or 4) if the corporate form is used. The form of organization may also affect the tax exemption privileges. The specific corporate arrangement may further influence the amount of the sales tax and the applicability of the customs duty drawback. These are discussed in Volume 2, Chapter II.

Liability of Owners. In some forms of business organization, the owners are liable for the obligations incurred by the project. This is true of the partners in a general partnership, general partners in a limited partnership, and single proprietors.

In other forms of organization, the liabilities of the owners are limited to their actual investments in the firm, plus the unpaid balance of their subscriptions or commitments. This is the case of stockholders in corporations, and of limited partners in limited partnerships. Because of this distinction in the extent of liabilities of the owners, risky ventures may be organized as corporations.

In some economic activities, the form of organization may not matter much as far as the liabilities of the owners are concerned. In inter-island shipping, for instance, the civil liability of the shipowners in case of collisions is limited to the value of the vessel and the freight earned during the voyage. In case of shipwrecks, the losses suffered by a vessel and her cargo shall be individually for the account of the respective owners.

Legal Requirements. The proponents may decide on the type of organization only when the law expressly allows the adoption of any alternative, or when there is no law specifying a particular type. The Insurance Act, for instance, allows an insurance company to take the form of a corporation, association, partnership, or even a single proprietorship. In manufacturing or trading, there is no law which specifies the type of organization.

In some fields, however, the proponents do not have the choice for the law requires that the corporate form be adopted. Examples of these are commercial banks, savings and mortgage banks, and rural banks.

There are also certain legal restrictions on the specific corporate set-up (Alternative 1, 2, 3 or 4). For instnace, a new subsidiary (Alternative 2) would be illegal if the existing and new projects are in agricultural industries. The Corporation Law provides that an agricultural corporation may not be a stockholder in another agricultural corporation. A mining corporation may be a stockholder in another mining corporation but may not hold over 40% of the capital stock. Furthermore, it may not be advisable to set up an independent new corporation for the mining or agricultural project (Alternative 3), since a stockholder of two or more agricultural or mining corporations may hold up to 15% only of the capital stock of each corporation. Hence, if both the existing and proposed projects are in agriculture (or mining), and if it is decided to have a corporation handle the new project, only Alternative 1 may be adopted.

C. Ownership

The ownership of a project should be such that it meets all the legal requirements as to the percentage of Filipino ownership in the business organization.

If the corporate form of business organization is decided upon, the proposed Filipino participation in the ownership should be checked with the legal requirements. If the proposed Filipino participation is below the minimum legal requirement, then the foreign investors have to decrease their stockholdings.

The legal requirements have to be met in order that the project may be able to:

1. Exist
2. Sell to the Philippine government
3. Obtain tax exemption privileges
4. Obtain government financing.

Some of the requirements have to be met and fulfilled in order that the project may exist or operate. The other requriements may not affect the basic operations of the project. They must be fulfilled only if it is expected that the project would get certain concessions or privileges from the government, such as government business, tax exemption, or government financing.

Basic Existence. The industries requiring Filipino ownership, and the covering laws are:

1. Industries using natural resources—agricultural, timber, mineral lands of the public domain, water, minerals, coal, petroleum, and other mineral oils, and all forces of potential energy—60%—Constitution.
2. Mine prospecting - 60% - C.A. 137 (Mining Act)
3. Coal mining (using government land) - 60% - R.A. 740
4. Petroleum exploration - 60% - R.A. 387 (Petroleum Act of 1949)
5. Public utilities - 60% - Constitution
6. Mass media - 100% - Constitution
7. Inter-island shipping - 75% - Customs Law
8. Domestic air transporation - 60% - R.A. 776
9. Retail trade - 100% - R.A. 1180
10. Commercial banks - 60% - 70% - R.A. 337 (General Banking Act)
11. Financing companies - 60% - R.A. 5980
12. Investment houses - 51% - P.D. 129
13. Savings and loan association - 60% - R.A. 3779
14. Rural banks - 100% - R.A. 720
15. Private development banks - 60% - 70% - R.A. 4093

The law also provides for minimum Filipino directors in corporations in selected industries as:

1. Commercial banks — 2/3
2. Financing companies — 2/3
3. Investment houses — 51%
4. Investment companies — 100%
5. Private development banks — 2/3

6. Rural banks	—	100%
7. Savings and loan associations	—	60%

Sales to the Philippine Government. There are at least four laws which require a certain percentage of Filipino stockholding in a corporation in order that the corporation may be allowed to sell goods or services to the government, or in order that it may be given preference in such sales:

1. Public works construction - 70% - Public Act 4239.
2. Repair of public works—the bids of firms which are at least 75% Filipino-owned are preferred over the bids of foreign firms if the former bids do not exceed 15% of the latter - CA 541.
3. Purchases of equipment and supplies by the government—the bids of firms which are at least 75% Filipino-owned are preferred over the bids of foreign firms if the former does not exceed 15% of the latter - CA 138 (Flag Law).
4. Purchases by government-owned or controlled corporations - 60% - R.A. 5183.

Tax Exemptions. The following should have the required Filipino participation in order that they may be granted tax exemptions:

1. Firms desiring to avail of incentives under the Investment Incentives Act (R.A. 5186)—should be at least 60% Filipino-owned. Furthermore, at least 60% of the directors should be Philippine citizens.
2. Firms desiring to avail of incentives under the Export Incentives Act (R.A. 6135)—should be at least 60% Filipino-owned. Furthermore, at least 60% of the directors should be Philippine citizens.
3. Overseas shipping—firms which may be exempted from income tax on overseas shipping operations or on construction of ships for overseas service should be at least 60% Filipino-owned - R.A. 1407 (Philippine Overseas Shipping Act).

Government Financing. The financing given by at least three government offices are geared to firms with the required Filipino stockholdings:

1. DBP—generally, the firm should at least be 60% Filipino-owned.
2. Philippine Coconut Administration—the coconut centrals to

be financed should be at least 51% Filipino-owned - R.A. 1369.

3. National Cottage Industries Development Authority—the cottage industries to be financed should be at least 75% Filipino-owned - R.A. 3470.

D. Internal Structure

An effective internal structure is required to insure the smooth operation of a project. The internal structure refers to the various departments and sections of a project, their specific functions, and their relationships to each other. The internal structure has to be planned out during the project study stage so that:

1. The study on the personnel requirements may be facilitated; and
2. There will be a systematic basis in the organization of the personnel when the project is being implemented.

In planning the internal structure, the following have to be considered:

1. The basic objective of the project;
2. The nature and extent of operations of the project; and
3. The form of business organization, and the ownership structure.

1. FUNCTIONS

The internal structure plan should cover all the major functions to be carried out by the various units of the project. For a manufacturing project, the units include some of the following functions—

1. *Manufacturing*
    a. Research and development for raw materials, products, and processes
    b. Industrial engineering—time and motion studies, etc.
    c. Quality control
    d. Materials purchasing and warehousing
    e. Production
    f. Production planning and control
    g. Plant maintenance and utilities.

2. *Marketing*
    a. Market research and planning
    b. Advertising
    c. Sales promotion
    d. Sales
    e. Finished products warehousing
    f. Finished products shipping.
3. *Finance and Administration*
    a. Financial planning and budgeting
    b. Tax and insurance management
    c. Accounting
    d. Auditing
    e. Systems and procedures
    f. Legal
    g. Personnel
    h. Credit and collection
    i. Cash custody
    j. Public relations
    k. Secretarial
    l. Building services

2. ORGANIZATION CHART

The relationships of the various departments and sections to each other can best be shown in an organization chart. The over-all project operations may be divided by basic function (manufacturing, marketing, etc.), by location, by product line, or by some other method.

Assume, for instance, that the proposed operations of a project will cover the following:

	Manila	Cebu	Davao
Car -			
Assembly	X	X	
Sales	X	X	X
Truck -			
Assembly	X		X
Sales	X	X	X
Service	X	X	X

The possible organizational structures are:

By function - as shown in Exhibit 7
By area - as shown in Exhibit 8
By product line - as shown in Exhibit 9.

A suitable organization for an actual project may be totally different from, or may be a modification, of any one of the three above. For instance, the organization in Exhibt 7 may be modified by placing the service manager under the marketing manager, and by placing the personnel manager directly under the general manager.

E. Personnel

The study on personnel will cover the following: personnel requirements (skills required and number of personnel), sources, and estimate of compensation.

1. REQUIREMENTS

The personnel requirements in terms of the position titles, necessary qualifications, and number of personnel for each position or type of qualification, may be based on the organization chart. Reference should be made, however, to the results of the marketing and engineering studies. The requirements of the marketing department will depend on the marketing plans; those of the manufacturing department may be obtained from the machinery suppliers. Efforts should be made, however, to check the estimates of the suppliers. In one case, it was fould out that the estimates of a Japanese supplier were much lower than the actual requirements. This was due to the fact that the effective weekly working time of the Japanese is much longer than that of the Filipinos.

2. SOURCES

Top Technical Personnel. If the project is in an industry which is new in the Philippines, it may be likely that there will be no trained Filipino available. In this case:

1. The technical personnel during the initial years of operations will have to be foreigners. Arrangements will have to be made also

with the Filipino understudies who will take over when the foreigners leave; or

2. Filipinos will have to be sent abroad for training.

In deciding which of the two alternatives to take, one has to consider the overall costs involved. If foreigners are taken in, the compensation will be quite high. For instance, the average annaul compensation of American engineers is about ₱200,000; that of Japanese technicians, ₱100,000. The pay scales for Filipino engineers are much lower. Their average annual pay is less than ₱20,000.

Other Factory Personnel. An industrial project in the Greater Manila Area can easily get skilled workers from Manila or neighboring towns, and unskilled workers from the local community. However, if a factory will be in an agricultural province, there may be some difficulties in the recruitment and training. Skilled laborers have to be recruited from distant towns or provinces. The unskilled laborers coming from the farms or small shops still have to be trained.

3. COMPENSATION

The annual estimates of the total personnel compensation may be based on a tentative plantilla. The plantilla will take into account the organization chart and the personnel requirements. The plantilla will show the position titles for the entire business organization, number of persons for each position, and the basic periodic rates. The sources of data on the basic rates are discussed below. Annual increases in the basic rates should be considered. In addition, fringe benefits should be provided for. The compensation of the top management personnel should be estimated separately.

Basic Periodic Rates. The Minimum Wage Law (R.A. 602 as amended) prescribes a legal minimum rate for workers in the non-agricultural industries—which is ₱8 a day. For agriculture, the rate is ₱4.75.

Central Bank. The daily wage rates of workers in Manila and suburbs for December 1973 as listed by the Central Bank of the Philippines, are as follows:

Common laborers	₱11.00
Foreman	20.10

Drivers	13.20
Mechanics	14.60
Electricians	13.60
Carpenters	10.90
Masons	10.60
Plumbers	12.20
Painters	12.90
Lathemen	13.10
Blacksmiths	12.90
Tinsmith	12.20
Boilerman	14.40
Cigar and cigaret makers	9.00
Compositors	13.40
Linotypists	16.80

In 1974, the *National Economic and Development Authority* conducted a wage study in selected industries. The results are shown in Exhibit 10.

Salary Raises. The project study should provide for annual increases in the salary rates. The range as a percentage of the pay is 5-40%. The increase not only promotes efficiency through improved employee morale but also forestalls labor disruptions.

Fringe Benefits. The possible fringe benefits are:

1. Paid sick, vacation, and maternity leaves
2. Christmas and other kinds of bonuses
3. Overtime and nighttime differential pay
4. Social Security System premiums—employer's share
5. Free housing, transportaion, medical and dental treatment, and life insurance premiums
6. Maintenance of company canteen and recreational facilities.

Most Philippine firms give: an annual 15-work-day*vacation leave;* an annual 15-work-day *sick leave;* and a *maternity leave* with 100% of the basic pay.

The Labor Code entitles women employees a total of 6 weeks *maternity leave* (2 weeks before delivery and 4 weeks after) at full pay. Projects which will employ a number of women, as cigaret manufacturing projects, may be significantly affected by maternity leaves.

If the number of personnel included in the plantilla does not take into account the employees who will be on *leave* with pay, provisions should be made for the compensation of casuals who will handle the job while the regular employees are on leave.

Provisions should also be made for *Christmas bonus* which is usually equivalent to one month's pay. New projects, however, may start with 1/2 month's pay.

The Labor Code provides for *overtime* rates as:

	Rate as % of normal hourly rate
Regular working day	
In excess of 8 hours	125%
Sunday (if the employee's scheduled rest day, and if not a holiday)	
For the first 8 hours	130%
In excess of 8 hours	169%
Special holiday	
For the first 8 hours	130%
In excess of 8 hours	169%
Regular holiday	
For the first 8 hours	260%
In excess of 8 hours	338%

For most chemical plants and public utilities, the payments for overtime and shift differential may be material.

The *Social Security Act* of 1954 as amended offers to workers: retirement, death, permanent disability, and sickness benefits. The contributions to the Social Security System under this Act are:

Monthly salary	Employer's share	Employee's share	Total
₱ 300	₱ 12.30	₱ 8.70	₱ 21.00
425	17.40	12.40	29.80
600	24.50	17.50	42.00
800	32.70	23.30	56.00
1,000 or over	40.80	29.20	70.00

The *Employees Compensation and State Insurance Fund*, created by Presidential Decree No. 622 dated December 27, 1974, provides for the following benefits to employees: medical, disability, and death. Employers contribute to the Fund an amount equivalent to 1% of the employees' salaries. Monthly salaries of personnel in excess of ₱1,000 each are not subject to the 1% contribution. Employees do not contribute to the Fund.

The *Philippine Medical Care Act* of 1969 (R.A. 6111 as amended) gives the following to employees:

1. Hospitalization expense benefit;
2. Surgical expense benefit; and
3. Medical expense benefit.

The employers contribute 1.25% of the payroll, and the employees another 1.25% to the fund. Salaries in excess of ₱300 a month are not considered for purposes of computing the contribution.

The Labor Code requires *emergency medical and dental services* as:

Number of employees	To be provided
10-50	First aider
50-200	Nurse if the work is hazardous; first aider, if the place is not hazardous
200-300	Nurse, physician, dentist, and emergency clinic
over 300	Nurse, physician, dentist, dental clinic, and emergency hospital.

Compensation of Top Management Personnel. In addition to the salaries and fringe benefits, compensation in the form of one or more of the following may have to be provided for the top management personnel: director's fees or per diems, housing allowances, use of company cars, transportation allowances, representation allowances, promoters' shares, stock options, and profit sharing bonus.

4. MANAGING FIRM

Instead of having a complete set of management personnel, a project may get the services of a firm to act as the general managers. The extent of the role of the managing firm varies a lot. On one hand, the managing firm may assign one of its own personnel as the general manager of the project. The project on its own will have to employ its department managers. On the other extreme, the general manager, department managers, and even the supervisors will come from the managing firm.

Managing firms in the Philippines are usually related in some other ways to the managed project, as through interlocking stockholders, or through parent-subsidiary relationships.

The compensation for the managing firm may be a fixed rate, a percentage of net profit, or a percentage of sales.

Exhibit 1

GANTT CHART

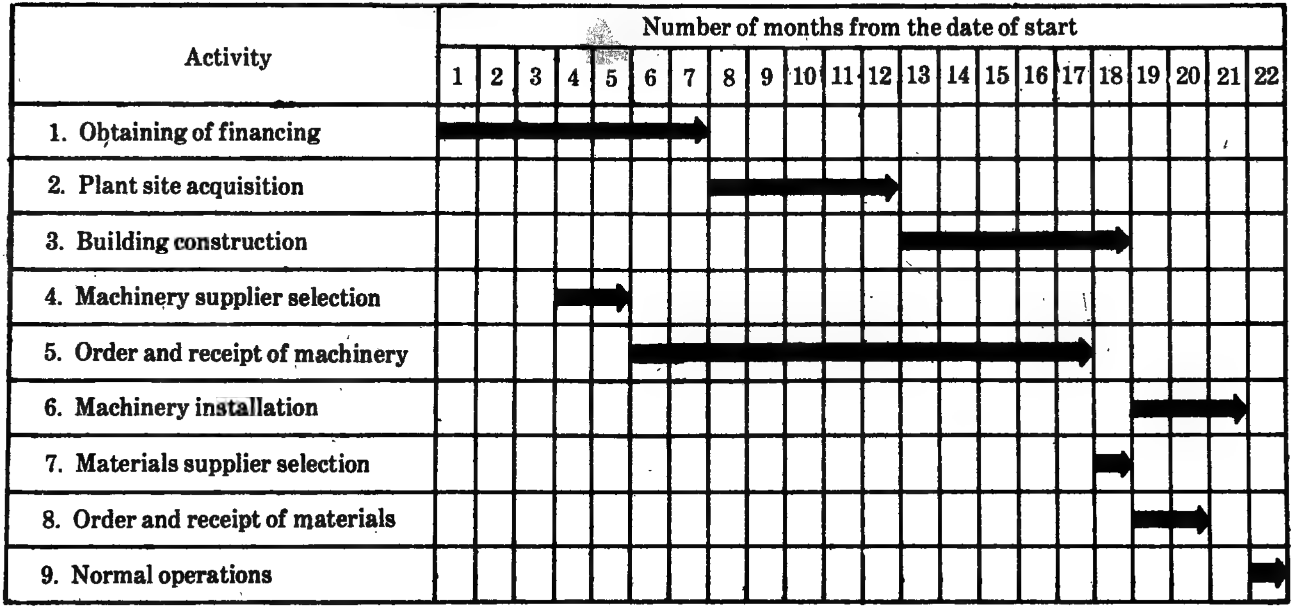
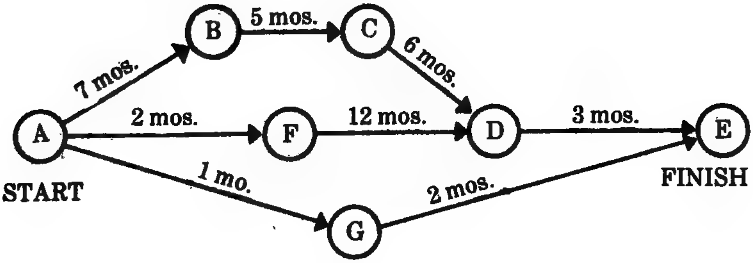


Exhibit 2

PERT NETWORK
ORIGINAL SCHEDULE
In Months

PATHS:

A-B	Obtaining of financing
B-C	Plant site acquisition
C-D	Building construction
A-F	Machinery supplier selection
F-D	Order and receipt of machinery
D-E	Machinery installation
A-G	Materials supplier selection
G-E	Order and receipt of materials



ORIGINAL SCHEDULE:

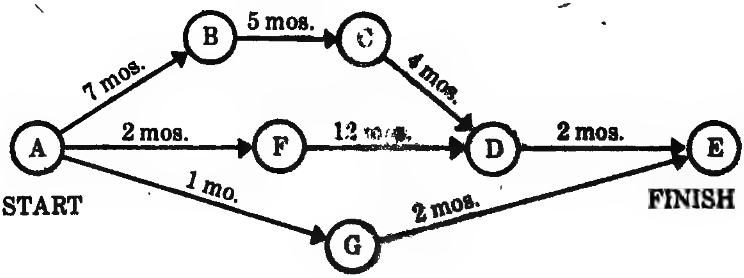
A-B-C-D-E	—	21 mos.
A-F-D-E	—	17 mos.
A-G-E	—	3 mos.
Expected project completion	—	21mos.

Exhibit 3

PERT NETWORK
REVISED SCHEDULE
In Months

PATHS:

A-B	Obtaining of financing
B-C	Plant site acquisition
C-D	Building construction
A-F	Machinery supplier selection
F-D	Order and receipt of machinery
D-E	Machinery installation
A-G	Materials supplier selection
G-E	Order and receipt of materials

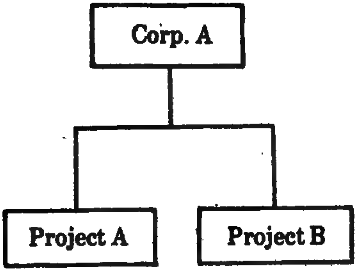


REVISED SCHEDULE:

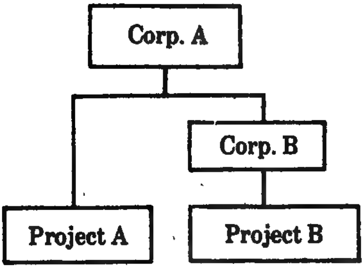
A-B-C-D-E — 18 mos.
A-F-D-E — 16 mos.
A-G-E — 3 mos
Expected project completion — 18 mos

Exhibit 4

ALTERNATIVE CORPORATE FORMS OF BUSINESS ORGANIZATION EXISTING CORPORATION AND NEW SUBSIDIARY



Alternative 1 — Existing corporation.



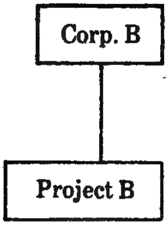
Alternative 2 — New subsidiary.

LEGEND—

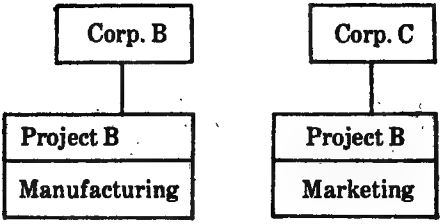
CORP. A	-	The existing corporation.
PROJECT A	-	The project currently owned and managed by Corp. A.
CORP. B	-	The new corporation to be set up.
PROJECT B	-	The new project.

Exhibit 5

ALTERNATIVE CORPORATE FORMS OF BUSINESS ORGANIZATION NEW INDEPENDENT CORPORATION AND NEW SISTER CORPORATIONS



Alternative 3 — New independent corporation.



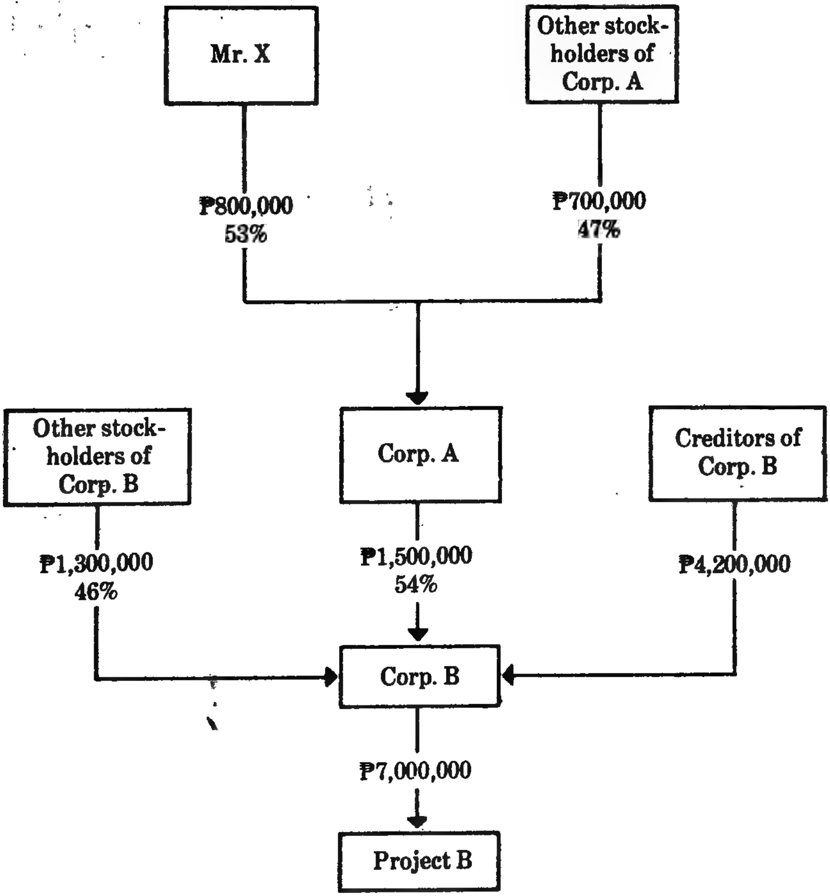
Alternative 4 — New sister corporations.

LEGEND—

CORP. B - The new corporation to be set up.
CORP. C - The new corporation to be set up, in addition to Corp. B.
PROJECT B - The new project.

Exhibit 6

CORPORATE FORM OF BUSINESS ORGANIZATION MANAGEMENT CONTROL WITH THE MINIMUM OF FINANCING



Note: The above arrangement enables Mr. X, majority stockholders of Corp. A (parent company of Corp. B), to obtain control of Corp. B by putting in only ₱800,000 out of the ₱7,000,000 required by the project of Corp. B.

Exhibit 7

ORGANIZATION CHART BY FUNCTION

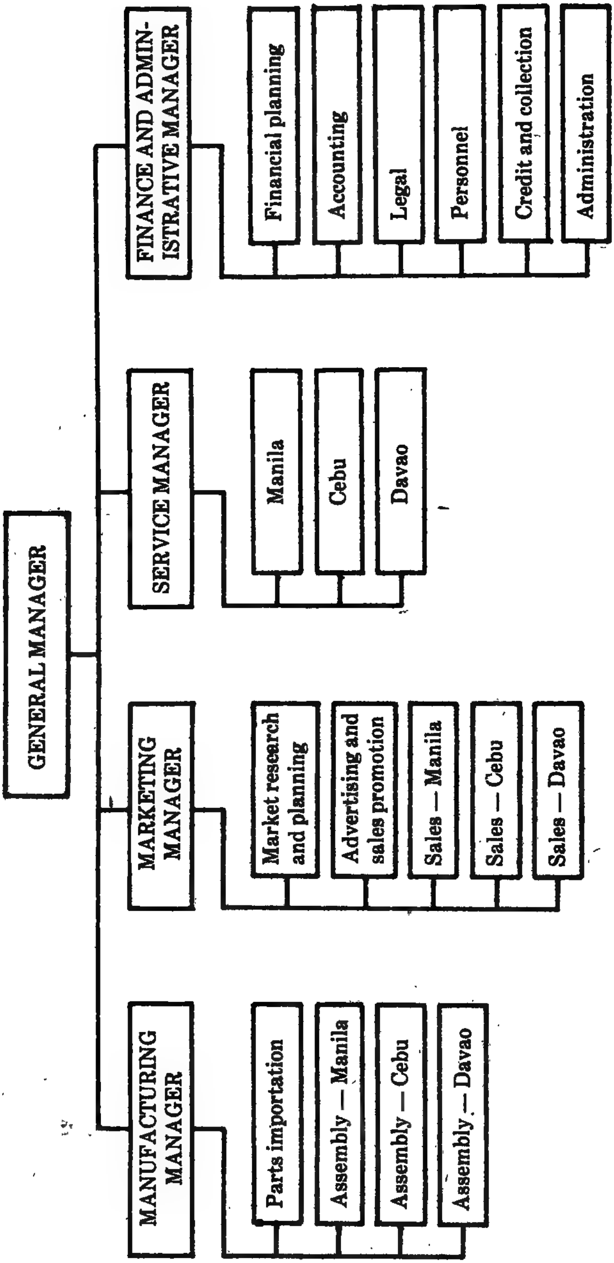


Exhibit 8

ORGANIZATION CHART BY AREA

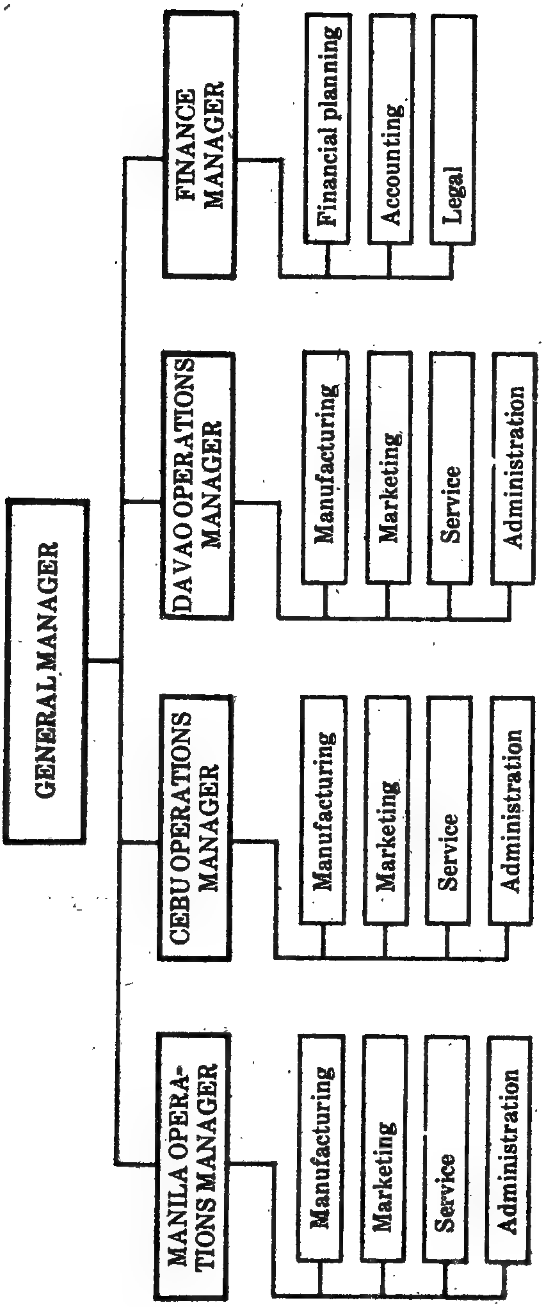


Exhibit 9

ORGANIZATION CHART BY PRODUCT LINE

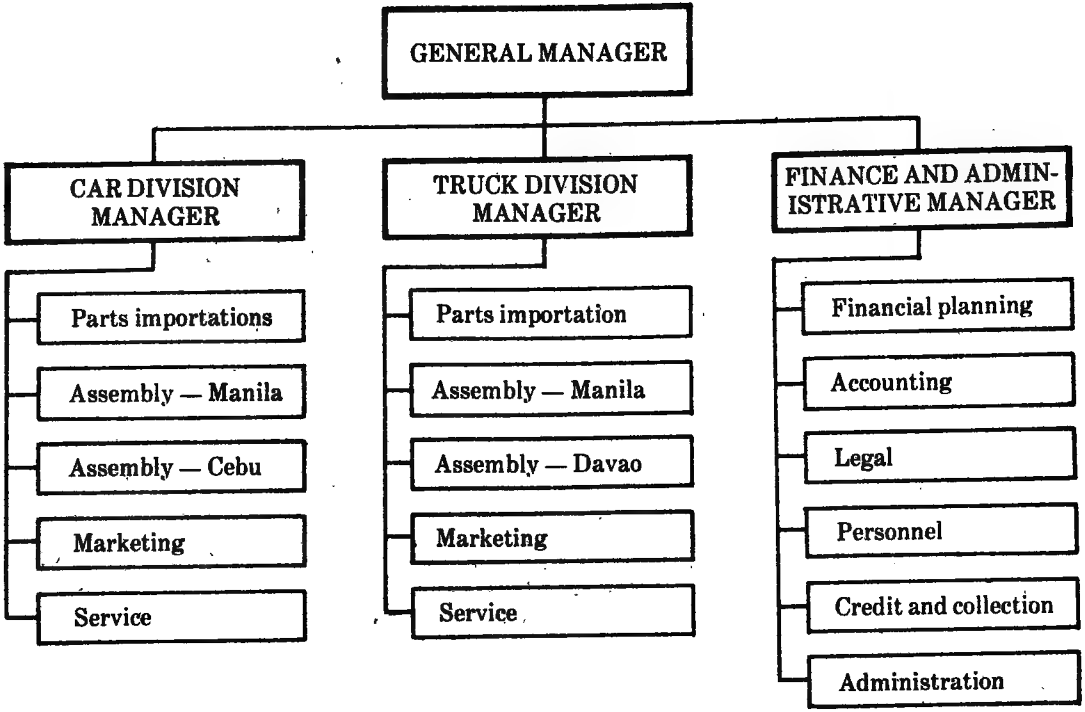


Exhibit 10

NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY RESULTS OF 1974 WAGE SURVEY

	Median Monthly Salary	
	Pharmaceutical Industry	Textile Industry
General office		
1. Personnel manager	1,700	820
2. Chief or corporate accountant	1,210	870
3. Bookkeeper	460	340
4. Accounting clerk	380	310
5. Clerk-typist	340	
6. Secretary	550	310
7. Legal officer	770	830
8. Statistician	450	310
9. Cashier	550	810
10. Collector	420	
11. Telephone operator	390	320
12. Driver	400	230
13. Messenger	410	
14. Janitor	240	180
15. Physician	1,180	560
16. Dentist		510
17. Nurse	510	330
Sales—purchasing—warehousing		
1. Salesman	520	
2. Purchasing agent	590	
3. Warehouse foreman	740	
Technical		
1. Artist illustrator	620	
2. Cloth weave designer		360

	Median Monthly Salary	
	Pharmaceutical Industry	Textile Industry
3. Chemist	470	
4. Quality control man	470	
Manual		
1. Compressor machine operator	510	
2. Compounder	450	
3. Machine packager	400	
4. Labeler	360	180
5. Bottle washer	350	
6. Laborer	330	190-210
7. Laboratory helper	240	
Utility and service		
1. Security guard	510	280
2. Forklift operator	510	
3. Electrician	360	220
4. Plant mechanic	430	
5. Maintenance mechanic		210
6. Tinsmith		200

Chapter V

Marketing Study

THE OBJECTIVE OF THE MARKETING STUDY IS TO establish: the annual *quantity* of the product which is expected to be sold by the project in the future; the selling *price* at which the product can be sold; and the *marketing program* which have to be adopted in order to sell the given quantity at the given price.

Before the sales quantity can be projected, the demand-supply situation has to be studied. The past or historical *demand* (or consumption or usage) has to be projected in order to have an estimate of the total demand in the future. The project's share of the total future demand, or the quantity which the project may be able to sell, is then estimated by considering the demand-supply situation, the prices, and the marketing programs.

The study of the *supply* or competitive situation involves a review and forecast of the importations and local production.

The *prices* to be adopted by the project may be determined after a review of the prevailing industry prices of both imported and locally-made goods.

The *marketing program* covers the terms of sale, distribution channels, transportation arrangements, and similar items. It considers the objectives of the project proponents and the industry practices.

A. Demand

Demand (in quantity) may be considered as equivalent to the sales quantity, consumption, or usage. Demand may refer either to the past or historical demand, or to the projected or future demand.

The expected sales quantity of a project depends on the total future demand for the product. Through the application of certain projection tools, such as the arithmetical straight line or the statistical geometric curve method, an estimate of the future demand or *projected demand may be made, based on past demand.* There are certain instances, however, when for the sake of reliability, it is better to have *projected demand based on data other than past demand.* These other data may refer to population, car registrations or hotel guests. Before adopting the projected demand figures which are the results of the projection tools, and which are based on past demand or other data, *an evaluation of the projection methods and projection bases* may be made first.

The *projected demand* resulting from the appropriate projection method and projection basis may be subject to *adjustments.* These adjustments may be called for because of (1) the use of abnormally low historical figures, and (2) the expected increased usage of the product.

Finally, the *adjusted projected demand* should be reviewed for its over-all reasonableness.

1. PAST DEMAND

The figures on the past demand which may be used in the demand projections should preferably represent the actual consumption or usage. However, since it is difficult to obtain data on actual consumption or usage, specially for consumer items, past demand figures are commonly based on the total of *importations* and *local production.* Theoretically, this total should be adjusted for the changes in the year-end inventories so as to obtain the figure on the actual consumption. However, this adjustment is seldom made as it is impossible to obtain the data on the inventories of most industries.

This section discusses the following items which may represent past demand:

1. Consumption
2. Importations
3. Local production.

Also discussed here is the period for which data on past demand may be obtained.

Consumption. Past consumption figures on consumer items may be obtained directly from the consumers through surveys. Under this method, pre-selected consumers are interviewed through the telephone or in person, or are requested to fill up a questionnaire. The main drawbacks of the consumer surveys are the cost and time involved and the quality of the results. Two surveys on the same product but conducted independently may give widely divergent results due to the extent of personal opinion which enters in the selection of the consumers to be contacted (called the sample) and in the interpretation of the answers given by the consumers.

Past consumption figures on industrial goods may be obtained from the firm-users. However, they are normally reluctant to give data on cunsumption as this might be used in estimating their production volume.

Importations. The Philippine importation figures to be studied should pertain not only to the specific product type under consideration but also to related items. For instance, if demand projections for new textile are to be made, the import data should pertain not only to new textile but also to used clothing and remnants. The significance of the imporations of these related items may be noticed from the following table:

RECORDED PHILIPPINE IMPORTATIONS
IN THOUSAND KILOS

Year	New Textile	Used Clothing	Remnants	Total
1965	8	9,686	2	9,696
1966	32	4,211	222	4,465
1967	5	1,609	5,345	6,959
1968	5	1,168	25	1,198
1969	7	-	4,129	4,136
1970	22	-	4	26
1971	3	-	18	21
1972	25	1	18	44

The data on the Philippine importations may be obtained from:

1. Manila embassies or consulates of the exporting countries;
2. Central Bank of the Philippines—Department of Economic Research;
3. National Economic and Development Authority;
4. Bureau of Customs—Budget and Finance Department, Statistics Division
5. Private service firms which compile data on imports; and
6. Philippine importers.

For any given year the export data given by the Manila embassy of the exporting countries will differ from the official import data of the Philippines. This is so because the export data are based on the ship departures in the exporting country, while Philippine import data are based on the ship arrivals in the Philippines, or on the clearance of the papers. Furthermore, the goods which are smuggled into the Philippines will not be included in the Philippine records, or will be erroneously declared.

The *Central Bank* data on imports are compiled on a calendar year basis. The following are available: source-country; commodity; quantity; and free on board (FOB) value, marine and insurance, and ocean freight, in dollars.

The *National Economic and Development Authority* data are published on a calendar year basis. The following are available: source-country, commodity, quantity, and FOB value in pesos.

The *Bureau of Customs* data are published on a fiscal year basis. The following are available: tariff paragraph number of the Customs and Tariff Code, weight, dutiable or CIF value, and the corresponding customs duties, special import tax, compensating tax, sales tax, and specific tax.

Local Production. The data on local production may be obtained from:

1. Central Bank—Department of Economic Research
2. National Economic and Development Authority (NEDA)
3. Trade associations
4. Manufacturers.

Both the Central Bank and the NEDA complie data on the production of selected commodities. The latter office publishes its compilations.

Some trade associations, such as the Philippine Cement

Corporation, the Philippine Lumber Producers' Association, Inc., and the Philippine Automotive Association gather data on the industry production or sales.

Local Production and Importation. Past demand may be determined by adding up the local production or sales of locally-produced items, and the importations. For cars, this may be done as follows:

	Sales of locally-assembled cars[(a)]	Importations[(b)]	Total demand
1956	2,960	1,610	4,570
1957	3,990	1,290	5,280
1958	2,770	2,720	5,490
1959	2,800	1,590	4,390
1960	2,140	6,880	9,020
1961	2,740	7,770	10,510
1962	4,440	1,520	5,960
1963	7,200	2,980	10,180
1964	10,240	14,210	24,450
1965	11,530	14,060	25,590
1966	12,170	15,720	27,890
1967	14,640	16,190	30,830
1968	17,510	14,780	32,290
1969	17,150	17,170	34,320
1070	7,380	9,370	18,750
1971	9,450	7,710	17,160
1972	11,990	9,150	21,140
1973	16,740	6,060	22,800
1974	21,840		

(a) Source: Philippine Automotive Association
(b) Source: Central Bank for 1956-1967; Bureau of Census for 1968-1973

Period to be Covered. If the data on past consumption are readily available, they should be obtained as far back as possible—probably way back up to 1946, which is the first post-war year. If some difficulties are encountered in obtraining the data pertaining to the period starting 20 years ago and if the projections will be for 3 or 5 years only, then past consumption data for the last 5, 10 or 15 years only may be obtained.

Before the past data may be used in projecting the demand, they should be carefully reviewed. For some product lines, the consumption data immediately after World War II may be quite abnormal. Furthermore, the institution of the full decontrol program in 1962 and the floating of the peso in 1970 caused the importations of several types of products to decrease. For instance, the importations of assembled cars decreased from 7,770 units in 1961 to 1,520 in 1962. This sudden decrease also caused the decline in the total consumption (sales of locally-assembled cars, and importations) from 10,510 units in 1961 to 5,960 in 1962. Such events should be carefully considered, otherwise unsound projected demand figures will result. Thus, the projected demand for cars based on the 1962-1965 historical figures will be much higher than the one based on the 1960-1965 figures.

The floating of the peso in February, 1970 increased the value of a dollar from ₱3.93 to ₱6.48. This sudden jump caused a decline in sales of locally-assembled cars—from 17,150 units in 1969 to only 7,380 in 1970.

2. PROJECTED DEMAND BASED ON PAST DEMAND

The past or historical demand may be used as the basis in projecting the demand into the future. The tools which may be used are:

1. *Arithmetical*
    a. Straight line
    b. Geometric curve
2. *Statistical*
    a. Straight line
    b. Geometric curve or semi-log
    c. Parabolic

The arithmetical tools do not use algebraic equations. Hence, they can be easily computed and understood by laymen. The statistical tools, on the other hand, use algebraic equations, and are more sophisticated. In addition to the tools mentioned above, there are many other more complicated statistical tools which are seldom used in actual projection work.

The past demand figures for cars for 1956-1965 as shown in an earlier table are used in illustrating the above-named tools.

The results of the above 5 tools, as well as the actual demand, are compared below:

	Thousand units					
	Projected demand, with 1956-65 as the base years					
	Arithmetical		Statistical			
Year	Straight line	Geo. curve	Straight line	Geo. curve	Parabolic	Actual demand
1966	27.9	33.8	22.3	23.6	32.0	27.9
1967	30.2	44.6	24.4	28.3	39.4	30.8
1968	32.5	58.9	26.6	34.0	47.8	32.3
1969	34.8	77.7	28.7	40.9	56.9	34.3
1970	37.1	102.6	30.9	49.2	66.9	18.8
1971	39.4	135.4	33.0	59.0	77.9	17.2
1972	41.7	178.7	35.1	70.8	89.7	21.1
1973	44.0	235.9	37.3	85.0	102.5	22.8
1974	46.3	311.4	39.4	102.0	116.0	
1975	48.6	411.0	41.6	122.4	130.4	
1976	50.9	542.5	43.7	146.9	145.8	

The projected demand as shown above are computed below.

Arithmetical Straight Line. The arithmetical straight line method is the simplest among those discussed here. This method may be applied to estimate the demand for cars for 1966-1976 as follows:

Computation of annual increase in demand	Thousand Units
Demand in 1965	25.6
Demand in 1956	4.6
Increase in 9 years	21.0
Simple average annual increase (21.0 ÷ 9)	2.3
Projected demand*	
1966	27.9
1967	30.2
1968	32.5

* Amount for the prior year plus 2.3 thousand units.

Projected demand	Thousand Unit
1969	34.8
1970	37.1
1971	39.4
1972	41.7
1973	44.0
1974	46.3
1975	48.6
1976	50.9

The tool is called a straight line because if the estimated demand based on this method is plotted in an arithmetical chart, a straight line is formed, as shown in Exhibit 6. This method assumes that the annual increases in the future will be of the same amount although the rate of increase (%) will keep on going down.

The tool may be used in making quick but rough estimates. In formal studies, this tool may be used only if the annual demand always increases, and if the annual increases do not vary greatly. Otherwise, the statistical straight line or other tools may be used.

Arithmetical Geometric Curve. This method may be applied to the demand for cars for 1966-1976. The average actual annual rate of increase is first estimated:

	In thousand units		Increase as % of prior year's demand
	Recorded demand	Year-to-year increase	
1956	4.57		
1957	5.28	.71	16%
1958	5.49	.21	4%
1959	4.39	1.10*	20%*
1960	9.02	4.63	105%
1961	10.51	1.49	16%
1962	5.96	4.55*	43%*
1963	10.18	4.22	71%
1964	24.45	14.27	140%
1965	25.59	1.14	5%
Average rate of increase			32%

* Decrease

The resulting estimated demand figures for 1966-1970 are:

1966	33,800	1971	135,400
1967	44,600	1972	178,700
1968	58,900	1973	235,900
1969	77,700	1974	311,400
1970	102,600	1975	411,000
		1976	542,500

NOTE: Amount for any year = 132% of the amount for the prior year

Under this method, the rate of increase in the projected demand is constant (32% in this illustration). However, the amount or magnitude of increase (in number of units) keeps on compounding (10.8 thousands from 1966 to 1967, and 14.3 from 1967 to 1968).

Statistical Straight Line (Exhibit 1). The demand for cars for each of the years 1966-1976 may be computed through the use of the following forumula:

$$Yc = a + bX$$

where:

Yc = Computed demand for the specific year, as 1966

$$a = \frac{EY}{n}$$

$$b = \frac{EXY}{EX^2}$$

X = Assigned value as shown in Exhibit 1, or the years as measured from the middle year(s), which is 1960-1961 in Exhibit 1.

In the formula $a = \frac{EY}{n}$, E represents "the sum of" and EY means the sum of Y. Y means the actual demand. "n" represents the number of past years covered, or 10 years (1956 to 1965).

The value of "a" and "b" should be determined first, by substituting the letters in the formula with the values as shown in Exhibit 1.

$$a = \frac{EY}{n} = \frac{105.44}{10} = 10.544$$

$$b = \frac{EXY}{EX^2} = \frac{353}{330} = 1.07$$

The projected value for 1966 may then be computed:

$Yc = a + bX = 10.544 + 1.07\,(11) = 22.3$

The projected amount for 1967 may be similarly computed:

$Yc = a + bX = 10.544 + 1.07\,(13) = 24.4$

The value of X, which is 11 for 1966 and 13 for 1967, was obtained from Exhibit 1.

The projected demand (in thousand units) will be then:

1966 - 22.3
1967 - 24.4
1968 - 26.6
1969 - 28.7
1970 - 30.9
1971 - 33.0
1972 - 35.1
1973 - 37.3
1974 - 39.4
1975 - 41.6
1976 - 43.7

The above projected demand figures were taken from Exhibit 1.

The annual increase of 2,100 units obtained through the use of the statistical straight line method may be compared with the 2.300 increase under the arithmetical straight line.

Statistical Geometric Curve (Semi-Log) (Exhibit 2). The demand for cars for each of the years 1966-1976 may be computed through the use of the following formula:

$\text{Log } Yc = \text{Log } a + X \text{ Log } b$

where

Yc = Computed demand for the specific year, as 1966

$$\text{Log a} = \frac{\text{E Log Y}}{n}$$

$$\text{Log b} = \frac{\text{E X Log Y}}{\text{EX}^2}$$

X = Assigned values as shown in Exhibit 2

In the formula $\text{Log a} = \frac{\text{E Log Y}}{n}$, E Log Y represents the sum of the logs of Y, as shown in Exhibit 2. "n" represents the number of past years covered, or 10 years (1956-1965).

This formula makes use of the table on common logarithms.

The values of Log a and Log b should be determined first, by substituting the letters in the formula with the values shown in Exhibit 2:

$$\text{Log a} = \frac{\text{E Log Y}}{n} = \frac{9.32074}{10} = .93207$$

$$\text{Log b} = \frac{\text{E X Log Y}}{\text{EX}^2} = \frac{13.19856}{330} = .039995$$

The projected value for 1966 may then be computed:

$$\begin{aligned}\text{Log Yc} &= \text{Log a} + \text{X Log b}\\ &= 0.93207 + 11\,(.039995)\\ &= 1.37196\end{aligned}$$

The antilog of 1.37196 as shown in a table on common logarithms is 23.6. The 23.6 represents the computed demand for 1966 in thousand units.

The projected amount for 1967 may be similarly computed:

$$\begin{aligned}\text{Log Yc} &= \text{Log a} + \text{X Log b}\\ &= 0.93207 + 13(.039995)\\ &= 1.45194\end{aligned}$$

The antilog of 1.45194 is 28.3

The projected demand (in thousand units) will be then:

1966 - 23.6
1967 - 28.3
1968 - 34.0
1969 - 40.9
1970 - 49.2
1971 - 59.0
1972 - 70.8
1973 - 85.0
1974 - 102.0
1975 - 122.4
1976 - 146.9

The above projected demand figures were taken from Exhibit 2.

The annual increase of 20% using the statistical geometric curve method may be compared with the 32% under the arithmetical geometric curve method.

The results of the geometric curve method (arithmetical or statistical) are higher than the results of the straight line method.

Statistical Parabolic (Exhibits 3 and 4). The demand for 1966-1976 may be projected through the use of the formula:

$$Yc = a + bX = cX^2$$

where

Yc = Computed demand for the specific year, as 1966

$$a = \frac{(EX^4)(EY) - EX^2(EX^2Y)}{n(EX^4) - (EX^2)^2}$$

$$b = \frac{EXY}{EX^2}$$

$$c = \frac{n(EX^2Y) - EX^2(EY)}{n(EX^4) - (EX^2)^2}$$

X = Assigned values as shown in Exhibit 3.

The values of a, b, and c, as computed in Exhibit 3 are as follows:

a = 6.9
b = 1.07
c = .11

The demand for 1966 may be computed as follows, with X = 11 as shown in Exhibit 3:

$$
\begin{aligned}
Yc &= a + bX + cX^2 \\
&= 6.9 + 1.07(11) + .11(11^2) \\
&= 6.9 + 11.7 + 13.31 = 31.98 \text{ or } 32
\end{aligned}
$$

The demand for 1967 may be similarly computed, with X = 13, as shown in Exhibit 3:

$$
\begin{aligned}
Yc &= a + bX + cX^2 \\
&= 6.9 + 1.07(13) + .11(13^2) \\
&= 6.9 + 13.91 + 18.59 = 39.4
\end{aligned}
$$

The projected demand (in thousand units), based on this method, is as follows:

1966 - 32.0
1967 - 39.4
1968 - 47.8
1969 - 56.9
1970 - 66.9
1971 - 77.9
1972 - 89.7
1973 - 102.5
1974 - 116.0
1975 - 130.4
1976 - 145.8

The above values are computed in Exhibit 4.

Comparison of Results of Projections (Exhibit 5 and 6). The projected demand resulting from the different methods based on past demands as discussed above is shown in Exhibits 5 and 6. The results of the parabolic method based on car registrations are also shown. It may be noted that:

1. If the *straight line* method (either arithmetical or statistical) is used, the annual change in the demand (expressed in thousand units of cars) is uniform, while the change in the demand as a

percentage of the demand for the prior year is decreasing.

2. If the *geometric curve* method (either arithmetical or statistical) is used, the annual change in the demand is increasing, while the change in the demand as a percentage of the demand for the prior year is uniform or constant.

3. If the *parabolic* method is used, the annual change in the demand may be increasing or decreasing; the annual change in the demand as a percentage of demand for the prior year may also be increasing or decreasing.

Choice of the Projection Method (Exhibits 7 and 8). Before selecting the projection method which may be adopted, the alternative methods may be tried first to determine the *computed* values for past demand. The method which gives the computed value that approximates the *actual* historical demand may be said to be the method which is best suited for projecting the actual historical demand into the future.

The computed values for past demand (Yc) which resulted from the application of the three statistical methods are compared with the actual historical demand (Y) in Exhibits 7 and 8. The deviations of the computed values from the actual ones are also shown. The average *absolute deviation* of the computed values under the three methods, from the actual values, are:

	Total absolute deviation per Exhibit 7	No. of years covered	Average annual deviation (thousand cars)
Straight line	.4	10	.04
Semi-log	7.4	10	.74
Parabolic	.1	10	.01

The *standard deviations*, as computed in Exhibit 7 are:

Straight line	-	4.37
Semi-log	-	3.86
Parabolic	-	3.02

The parabolic method has the least absolute deviation (0.1) and the least standard deviation (3.02). Hence, it may be said that, statistically, this method is the best among the three in this *specific* application.

3. PROJECTED DEMAND BASED ON DATA OTHER THAN PAST DEMAND

The future demand may also be based not on past aggregate demand data, but on other related information. The projected demand for cars, for instance, may be based on car registrations, and not on the importations and local assembly. Similarly, the projected demand for hotel rooms may be based on the number of hotel guests. The projected demand for textile may be based not on the past aggregate consumption but on the past per capita consumption.

In all of the above cases, the car registrations, number of guests, or the past population are first projected into the future through the use of the straight line, geometric curve, parabolic, or other methods. The future demand is then computed based on the estimated future car registrations, number of guests, or population.

The methods of projecting the demand for these three different industries are illustrated below.

It may be noted that the projected future demand in these three industries may also be based directly on the past demand. Thus, the future demand for textile may also be based directly on the past demand for this product.

Cars—Projected Demand Based on Registrations. Before the demand for cars based on registrations may be projected, it will be necessary to obtain the past registration figures which are as follows:

Year	Cars*	Year	Cars*
1956	65,800	1966	175,200
1957	73,400	1967	220.000
1958	78,000	1968	247,300
1959	84,200	1969	272,200
1960	87,700	1970	279,200
1961	94,200	1971	285,100
1962	100,200	1972	301,500
1963	116,100	1973	332,200
1964	138,900	1974	397,600
1965	150,300		

---

* The figures for 1956-1965 were the ones used as the bases of the projection. The actual registrations from 1966 to 1974 are given so they may be compared with the projected figures.

The above (1956-1965) figures may be projected by using any of the five methods described earlier, or some other method. If the parabolic method is used, the projected registrations and projected total demand will be as follows (in thousand units):

		Projected Demand		
	Registrations	Year-to-year increase*	Scrappage at 1.3%*	Total
1965	150.3	17.8	2.0	19.8
1966	168.1	20.0	2.2	22.2
1967	188.1	21.9	2.4	24.3
1968	210.0	23.7	2.7	26.4
1969	233.7	25.6	3.0	28.6
1970	259.3	27.4	3.4	30.8
1971	286.7	29.3	3.7	33.0
1972	316.0	31.2	4.1	35.3
1973	347.2	33.1	4.5	37.6
1974	380.3	34.8	4.9	39.7
1975	415.1	36.7	5.4	42.1
1976	451.8	38.5	5.9	44.4

* Based on car registrations.

The above car registration figures are projected in Exhibit 9.

The demand for cars theoretically consists of two portions:

1. The one which will cause an increase in the car registrations (17,800 from 1965 to 1966); and
2. The one which will replace the old cars to be retired or scrapped during the year.

The past annual rate of scrappage is 1.3% based on the total car registrations for the prior year. This rate seems to be low because the rate of increase in the registrations is quite high. The number of units supposed to be scrapped in 1969 (3,000 as shown above) may be compared with the increase in registrations of about 3,000 from 1953 to 1954. Thus, it may be noted that the cars are given, for purposes of projections, a theoretical life span of about 15 years (from 1954 to 1969).

The projected demand which is based on car registrations shown in the above table is compared with the projected demand based on local sales and importations in Exhibit 5.

Hotels—Projected Demand Based on Guests (Exhibit 10). Before the demand for rooms may be projected, the historical data on the following have to be obtained first:

1. Past annual rate of increase in the number of foreign and local guests;
2. Average number of nights the guests stay in hotels;
3. Room occupancy rate; and
4. Ratio of single rooms to double rooms.

The past annual rate of increase in the number of guests is obtained as:

	No. of Guests - in thousands		Annual rate of increase	
Year	Foreign[(a)]	Local[(b)]	Foreign	Local
1953	11.6			
1954	15.0		29%	
1955	61.8		12	
1956	21.6		29	
1957	26.1		20	
1958	30.9		18	
1959	34.4	11.0	12	
1960	50.7	11.8	47[(c)]	7%
1961	57.2	14.4	13	22[(d)]
1962	62.4	15.1	9	5
1963	69.8	16.0	12	6
1964	75.2	16.8	8	5
1965	84.0	20.4	12	20[(d)]
	Average		18%	11%

(a) Includes those who come here for a period of 1-59 days. Excludes in-transit travellers who do not leave the transit area, transport crews, and troops. Data were taken from "Statistics on Travel and Tourism, 1953-1965," prepared by the former Board of Travel and Tourist Industry (now, Department of Tourism).

(b) Survey by the former Program Implementation Agency and Presidential Economic Staff (now, NEDA).

(c) Abnormally high rate of increase probably due to the election conventions.

The average number of nights' stay for the foreign guests for 1961-1965 was estimated by the Program Implementation Agency (PIA) and the Presidential Economic Staff (PES) to be between 6.8 and 7. The number of nights' stay for local guests for 1964 and 1965 was estimated as 6-7.

The past occupancy rates as obtained by PIA and PES are:

1959	17%
1960	71
1961	82
1962	89
1963	93
1964	90
1965	90
Average	84%

An 84% occupancy rate means that on the overall, the rooms are occupied for 84% of the year, or roughly 310 days a year.

In May 1966, 19 hotels in the Manila area had a total of 1,972 rooms, classified as:

	Single	Double	Others
1. Hotel Filipinas	262	64	74
2. Manila Hotel	189	75	26
3. Hotel Sampaguita	100	40	20
4. Bay View Hotel	100	41	15
5. Hotel Timberland	54	57	7
6. House International	66	46	4
7. Hotel Mabuhay	32	72	1
8. Shellbourne Hotel	45	30	27
9. Hotel El Presidente	68	6	14
10. Hotel Fortuna*	-	-	90
11. Luneta Hotel	14	36	10
12. Swiss Inn	30	20	4
13. Empire Hotel	40	12	-
14. Avenue Hotel*	-	-	60
15. Valemon Hotel	22	25	-

		Single	Double	Others
16.	Aloha Hotel*	-	-	41
17.	Atami Hotel*	-	-	14
18.	Congress Family Hotel*	-	-	12
19.	Vermont Towers*	-	-	5
	Total	1,022	524	426

* No break-down available
Source: Survey by PES

Thus, the ratio of single to double rooms is about 2:1. If all the 1,972 rooms were classified as either single or double only, this will mean that about 50% of the guests stay in single rooms, and 50%, in double rooms.

Based on the above data, the demand for hotel rooms is projected as shown in Exhibit 10.

It may be noted that the number of guests were projected by using the arithmetical geometric curve method. Some other methods may also be used.

The results of the projections on the number of foreign guests for 1966-1974 are compared with the actual as:

	No. of foreign guests	
	Projected	Actual
1966	99,000	102,000
1967	117,000	109,000
1968	138,000	113,000
1969	163,000	123,000
1970	192,000	144,000
1971	227,000	144,000
1972	268,000	166,000
1973	316,000	243.000
1974	373,000	410,000
Total	1,893,000	1,554,000
Average annual rate of increase*	18%	21%

* Arithmetical geometric curve.

The projected and actual average number of nights' stay for foreign guests for 1966-1974 are:

	Projected	Actual
No. of nights' stay	7.0*	7.3**

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* Actual for 1961-1965, used in preparing the projections for 1966-1974.

** Actual for 1971.

The projected and actual hotel rates of occupancy for 1966-1974 are:

	Projected	Actual
Occupancy rate	84%*	85%**

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* Actual for 1959-1965, used in preparing the projections for 1966-1974.

** Actual for 1974, based on data from 16 hotels.

The projected and actual number of hotel rooms in 1974 are:

	Projected	Actual
Number of rooms, May 1966:		
Single	1,022	
Double	524	
Others	426	
Sub-total	1,972	
Or	1,970	
Additional rooms required, 1966 to 1974 per Exhibit 10	5,120*	
Total for 1974 per Exhibit 10	7,090	5,779

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* Number of rooms required to meet the needs of both foreign and local guests.

The 5,779 actual number of rooms as of end of 1974 are:

1.	Hotel Intercontinental	420
2.	Hyatt Regency	265
3.	Manila Hilton	425
4.	Philippine Village Hotel	287
5.	El Grande Hotel	398
6.	Bayview	300
7.	Filipinas	368
8.	Aurelio I and II	273
9.	Enrico	231
10.	Manila Royal	220
11.	Ambassador	247
12.	Mabuhay	103
13.	Tower	120
14.	Aloha	100
15.	Otani	110
16.	El Dorado	82
17.	Timberland	102
18.	House International	116
19.	President	160
20.	Gilarmi	138
21.	Capacabana	141
22.	19 others	1,173
	Total	5,779

Textile—Projected Demand Based on Population. The future demand for textile based on population was estimated as follows:

	Year	Demand (million yards)	Population (million)	Per capita demand - in yards
Past				
	1958	416	25.5	16.3
	1959	287	26.3	10.9
	1960	307	27.1	11.3
	1961	268	28.0	9.6
	1962	378	28.9	13.1
	1963	523	29.8	17.6
	1964	457	30.8	14.8
	1965	587	31.8	18.4
		Average		14.0

Year	Demand (million yards)	Population (million)	Per capita demand - in yards
Projected			
1966	459	32.8	14
1967	473	33.8	14
1968	489	34.9	14
1969	504	36.0	14
1970	521	37.2	14
1971	538	38.4	14
1972	554	39.6	14
1973	573	40.9	14
1974	591	42.2	14
1975	610	43.6	14
1976	630	45.0	14

The past demand figures for 1958-1964 which represent both local production and importations of new textile, used clothing, remnants, and rags, were obtained by the Program Implementation Agency and the Presidential Economic Staff. The data on local production were furnished by the textile mills while the data on imports are based on the Central Bank records. The 1965 figure was based on an EDF survey.

The population figure for 1960 of 27,100,000 was obtained from the census conducted by the Bureau of Census and Statistics. The annual increase of 3.2% up to 1960 was based on the census for 1960 and those of the prior years. The annual population figures for 1961-1976 were estimated by using the 3.2% growth rate.

The average per capita consumption for 1958-1965 was estimated at 14 yards. This figures was applied to the 1966-1976 projected population to arrive at the future demand for textile.

The projected demand for textile, based on population, is compared with the projections based on past demand (in million yards):

Year	Based on population (as above)	Based on past demand Straight line Exh. 11	Semi-log Exh. 12	Parabolic Exh. 13
1966	459	553	555	732
1967	473	587	602	886
1968	489	620	652	1,063
1969	504	653	700	1,264
1970	521	687	764	1,490
1971	538	721	827	1,739
1972	554	754	896	2,013
1973	573	787	970	2,310
1974	591	821	1,051	2,632
1975	610	854	1,138	2,977
1976	630	888	1,232	3,346

Demand projections based on population may be applied also to rice, antibiotics, and other necessities. This is so because the per capita consumption of these products is not greatly affected by changes in the per capita income.

4. EVALUATION OF THE PROJECTION METHODS AND PROJECTION BASES

The two preceding sections discussed five projection *methods*—arithmetical straight line, arithmetical geometric curve, statistical straight line, statistical geometric curve and statistical parabolic. Also discussed were four projection *bases*—past demand, car registrations, hotel guests, and population. Before the results of any projection method and basis may be adopted, an attempt should first be made to evaluate the alternative methods and bases in relation to the specific industry or product under consideration.

Evaluation of the Projection Methods. Different projection methods produce different results. Because of this, one may be tempted to use the method which best suits his purpose. A project promoter, for instance, may use the parabolic trend in forecasting the demand for the product, in order to convince the prospective investors that there will be a shortage. The demand projections resulting from the use of this method may be much higher than the results of the statistical straight line. On the other hand, the same promoter may use the statistical straight line method in order to convince other businessmen who are prospective competitors that there is no more room in the industry.

In deciding on the specific method to be adopted, the following should be considered:

1. The behavior of the past demand; and
2. The nature of the demand for the products.

If the past annual increases (in quantity) are more or less uniform, then the straight line method may be used. If the past annual increases (in quantity) kept on going up, but the percentage of rate of increase had been more or less constant, then the geometric curve method may be used. The use of the absolute and standard deviation as a test in deciding which of several methods best fits the trend in past demand, should be considered as explained earlier.

The projection method to be used should also consider the nature of the demand for the product. For instance, the demand for rice is directly related to the population. Slight changes in income will have no effect on the demand. Hence, the demand for rice may be projected through the use of the geometric curve method. The rate of increase (percentage) in the demand for this commodity is expected to remain constant, just like the rate of increase in population.

Evaluation of the Projection Bases. As a general rule, the projected demand should be based directly on the historical demand. This is because:

1. There may not be a close relationship between the demand and the base other than past demand; and

2. The possibility of an error is compounded if a base other than past demand is used. An error may arise not only in the past demand but also in the base being used.

For instance, it may not be advisable to project the demand for G. I. sheets based on construction expenditures because:

1. There may not be a close correlation between the demand for G.I. sheets and the construction expenditures; and

2. The historical data on construction expenditures may be more unreliable than the data on the past demand for G.I. sheets.

5. ADJUSTMENTS IN THE PROJECTED DEMAND

The future demand as projected through the use of the selected arithmetical or statistical methods may have to be adjusted if:

1. The historical demand figures are understated;
2. There are plans for the increased usage of the product; or
3. The projection method used has a basic limitation.

In the above cases, the projected demand before the adjustment will be unrealistically low.

Understated Historical Demand Figures. For certain industries, the historical demand figures may be considered as lower than the actual needs of the buyers. This may be true, for instance, in the case of cement. It may be noted that for most of the years from *1946 to 1965*, the consumers needed cement in excess of the total consumption figures. This is supported by:

1. The inability of the local plants to supply the actual needs, as supported by the high volume of imports as compared with the total consumption;
2. The restrictions on the importations due to the import controls (up to 1962); and
3. Over-all cement shortage as evidenced by high prices and cash payments for the cement, or terms of sale of 30 days only.

From 1946 to 1965, it may be noted that it was only in 1961 when the consumption figures are about equal to the quantity actually needed. It was also in this year that the importation was at its lowest. During this year also, the ex-bodega price of the Apo, Rizal and Republic Cement was about ₱2.90, as compared with the prices of the preceding and succeeding years which were over ₱3.00.

The abnormally low historical demand figures for the industry may be used as one of the reasons in making an upward revision in the estimates for the future demand as computed through the use of a projection method.

In the textile industry, the recorded consumption figures for *1958-1965* may be presumed to be underestimated due to the smuggling of textile products, and the alleged unrecorded channelling of the imported embroidery materials into the open market. Hence, the actual future demand could be higher than the future demand as estimated through the use of a projection method based on historical demand or population.

If the projected demand for cars are based on the recorded local assembly and importations of completed units for 1956-1965, rather than on the car registrations, the projections may be low due to the unrecorded importations. In 1962 and 1964, for instance, the recorded local assembly and importations were much lower than the increase in car registrations:

	1963	1964
Sales of locally-assembled cars	7,199	10,238
Imports	2,985	8,000
Total recorded supply	10,184	18,238
Increase in car registrations during the year	15,856	22,845
Unrecorded supply	5,672	4,607

In the hotel industry, if the projections are based on the number of rooms available multiplied by the occupancy rates for various hotels, the projected figures may be low. This is because hotel managements may tend to understate the occupancy rates in order to discourage prospective competitors from going into the industry.

Increased Usage of the Product. Definite plans of the government and private sectors which may be implemented may favor the upward revision of the demand estimates. For instance, a massive road cementing program may be used as a justification in raising the future demand for cement as computed through the use of a projection method based on the past demand. A policy of financial institutions to give loan priority for the construction of office buildings and residential houses will have the same effect.

A serious government plan to develop the tourist spots and to construct the connecting roads, and a program of international airlines to increase the frequency of their flights to the Philippines may call for an upward revision in the projected demand estimate for hotel rooms which is based on statistics.

The projected demand for an industrial goods may be similarly adjusted if the firm-users have a definite program for increasing their usage of the product and if the outlook in their respective industries is bright. Thus, the statistically-based projected demand for caustic soda may be increased if the prospects of the soap, edible oil, textile, petroleum, and pulp and paper industries are bright, and if most of the major firm users, such as Procter and Gamble

Philippine Manufacturing Co., Philippine Refining Co., and Bataan Pulp and Paper Co. will increase their caustic soda usage and will not import or manufacture their own caustic soda requirements.

Limitations in the Projection Method. Some projection methods may have some basic defects. For instance, if the statistical straight line or semi-log method is used in certain cases, the projected demand for the first future years may be lower than the actual demand for the last few years. Thus, if the statistical straight line method is used in projecting the demand for cement from 1946-1965 to future years, the result will be (in million bags):

Historical (actual)		
1963	-	28.5
1964	-	33.9
1965	-	37.5
Projected		
1966	-	32.1
1967	-	33.7
1968	-	35.4
1969	-	37.0
1970	-	38.6
1971	-	40.2
1972	-	41.8
1973	-	43.4
1974	-	45.0
1975	-	46.6
1976	-	48.2

The above projections may be compared with the actual consumption (million bags):

	Local production	Less exports	Local demand
1969	68.6	1.0	67.6
1970	57.8	.6	57.2
1971	64.1	17.4	46.7
1972	74.1	11.2	62.9
1973	95.2	28.4	66.8
1974	81.7	17.9	63.8

6. REVIEW OF THE PROJECTED DEMAND AS ADJUSTED

The final demand projection refers to the future demand which is the result of a projection method as adjusted due to understated base data or increased product usage. It should be reviewed for overall reasonableness by considering:

1. The per capita consumption
2. Other related data
3. Projections of other groups.

Comparison of Projections with Past Per Capita Consumption. The projected demand may be converted into a per capita basis and compared with the past per capita consumption in other places. For instance, one local company found out that its projected per capita consumption of safety matches in some provinces was much lower than the past per capita consumption in the other provinces. Hence, if other factors do not vary much among the provinces, it might be expected that the projected per capita demand for matches in the currently low per capita consumption provinces could materialize.

In the case of paper, the average Philippine per capita consumption for 1958-1963 was about 11 pounds.

The projected per capita consumption for 1980 is 31 pounds (based on total demand of 700,000 metric tons and population of 49,530,000). The 31 pounds 1980 Philippine per capita projection consumption may be compared with the actual 1973 per capita consumption of other countries:

U. S.	-	639 lbs.
Sweden	-	468
Canada	-	451
Denmark	-	359
Finland	-	359
Switzerland	-	344
Japan	-	320
Netherlands	-	320
U. K.	-	301
West Germany	-	299
Belgium	-	296
Australia	-	292

Norway	-	289 lbs.
New Zealand	-	269
France	-	240
Ireland	-	212
Austria	-	205
Iceland	-	187
Italy	-	175
East Germany	-	169

Comparison of Projections with Related Data. The projected demand for certain goods may be compared with selected related data. For instance, the projected demand for fresh and processed meat may be compared with the quantity of meat intake which the Filipino should ideally have as set by the Food and Nutrition Research Center of the National Institute of Science and Technology of the National Science Development Board. The Center has set the recommended allowance per capita of 172 grams per day or 63 kilos per year for meat. Based on a 1980 population of 49,630,000, total national meat requirements shall be 3,127,000 metric tons for 1980.

The projected demand for electrically-operated refrigerators and other household appliances may be compared with the number of households which are in areas with electricity and which have the required income.

Comparison of Projections with Those of Other Groups. The future demand as projected by the project proponents may be compared with the projections prepared by government offices, trade associations, or private firms. The comparison may prove to be revealing as the projections prepared by the project proponents may be too optimistic or very conservative.

In the case of the hotel industry, for instance, at least three groups have prepared projections on the number of foreign visitors in the Philippines: the Chechi and Co. of U.S. in 1961; the Board of Travel and Tourist Industry (BTTI), in 1961; and the Program Implementation Agency (now incorporated into the NEDA), in 1964, Their projected number of foreign visitors for 1968 was as follows:

Chechi	-	310,000
BTTI	-	249,000
PIA	-	174,000

The actual number of foreign visitors for 1968 was 113,000.

In the cement industry, the National Economic Council made a forecast of the demand in 1964, while the Program Implementation Agency made a study in 1965. The projected demand for 1967 was as follows:

NEC	45,600,000 bags
PES	88,200,000 bags

The actual demand for 1967 was 52,980,000 bags.

B. Supply

There are products which are directly competing, such as soap and detergents, and butter and margarine. If the product intended for the project has a substitute, then the future demand for both products should be estimated. The total estimated future demand should then be allocated between the proposed product and the *product substitute.*

The portion of the total demand which will be supplied by the proposed product will then be divided between those coming from *importations* and those coming from *local production.* The latter portion will then be allocated among the local firms, including new projects, in order to ascertain the *project's share of the market.*

1. PRODUCT SUBSTITUTES

The relative prices and quality, and the consumer acceptance of the competing products, may be used as the primary considerations in alloting the over-all projected demand to the proposed product and the product substitutes. The impact of these factors on the salability of the products may be gauged through the past trends in the relative consumption growth rates of the competing products in the Philippines and in other countries.

For instance, after the preparation of a market sudy, a domestic company planning to manufacture a dynamite realized that a product substitute, ammonium nitrate, could be reasonably expected to increase in popularity among the local users. The product substitute (ammonium nitrate) is more effective in actual applications than the proposed product of the company (dynamite) and sells at a lower price. It has been able to gain a wide acceptance among the users in the technologically-advanced countries and had outpaced the proposed product in sales volume.

In another case, the International Bank for Reconstruction and Development, in its "Past Trends and Future Prospects for Oils and Fats," cited quality improvements in margarine and changes in the relative prices of margarine and butter as two of the four probable main causes for the *decline* in the *U. S.* per capita *consumption of butter* from 1910 to 1959, and the *rise* in the per capita *consumption of margarine.* It may also be noted from the same report that the decrease in price of U.K. butter in relation to margarine, from 1952 to 1959, might have caused the *increase* in the *U.K.* per capita *consumption of butter* and the *decline* in the per capita *consumption of margarine.*

2. IMPORTATIONS

After taking out the portion of the total projected demand which will be met by the product substitutes, the remaining projected demand (the one corresponding to the demand for the proposed products) will have to be allocated between importations and local production. In order to have some bases in making the allocation between importations and local production, the following would be investigated:

1. Import duties
2. Tax-free importations
3. Export pricing and subsidies

The above items affect the landed cost of imported goods. In addtion to the cost consideration, the other factors which will affect the demand for imported goods as against that for local goods will be the comparative quality and the consumers' preference for imported brands.

Import Duties. One major factor which serves as a deterrent against the importation of finished goods is the high tariff duty on finished goods as compared to the lower rate on raw materials. This factor is quite effective, for instance, in bringing down the importation of assembled cars. Here, the tariff on a 4-cylinder, completely-knocked-down car is 25%, while that on an assembled car is 40%.

Possible adjustments in the tariff rates should also be considered. Thus, while the normal duty on pharmaceutical products is 30%, it may be noted that the Secretary of Health is allowed to lower the rate to 15% on selected items.

Tax-Free Importations. In evaluating the competition from the imported articles, the tax-free importations by the Philippine government, or by private parties should be considered. Importations by the government are either for its own use or for resale to the public as through the defunct National Marketing Corporation (NAMARCO), or the Rice and Corn Administration (RCA). Importations by private parties may be made through the Reparations Commission.

In the bidding for goods required by the government, such as cement and motor vehicles, the local manufacturers may be placed at a disadvantage. Local manufactueres pay import taxes on the imported raw materials. On the other hand, imported commodites for use by the government are not subject to any tax. The pricing practices of NAMARCO adversely affected several companies. For instance, when its usually low prices of selected imported items were further lowered by 30% in August 1965, three filled milk companies, at least one meat processing and canning plant, and one tinplate firm suffered reductions in sales volume.

Tax-free importations by private parties include the physicians' samples. These importations may have a significant effect on pharmaceutical projects as the current rate of duty is rather high—30%.

Export Pricing and Subsidies. The pricing policy of the foreign manufacturer-exporters should be carefully evaluated. The manufactueres may maintain a low price for their export sales. They are able to do this since some forms of government incentives are made available to them. For instance, the government of one highly industrialized country gives as subsidy to its textile mills the equivalent of ₱0.26 to every pound of cotton which the mills purchase within their country. The purpose of this is to reduce the cost of production of their textiles so that their export prices can be highly competitive in the world markets.

Projecting the Importations. Future importations are usually estimated not through the use of statistical projections based on historical data. Rather, they should be estimated through the "feel" of the industry after considering such factors as those discussed earlier.

In the cement industry, for instance, it may be assumed that almost all of the projected demand may be met by local production if the local plants can supply the required quantity. Importation is normally resorted to only if there is a shortage.

On the other hand, in the wheat flour milling industry, a certain portion of the projected demand has to come from importations because certain customers prefer some varieties of imported flour.

3. LOCAL PRODUCTION

After dividing the supply for the projected demand between importations and local production, the portion of the demand which will be met by *local production* may have to be allocated among the various competitors, including the project under consideration. The purpose of the allocation is to determine the *project's share of the market.*

The following factors will serve as some of the bases in the allocation:

1. Relative strength of the competitors, including the project, in terms of:
    a) Rated capacity and production volume
    b) Location
    c) Management and ownership
2. Prices set by the competitors
3. Marketing program of the competitors

Item 2 above is discusseds in Part C of this Chapter, while Item 3 is discussed in Part D.

If there are many competitors in the industry, as in rice production or cattle raising, the analyses in item 1 above may be limited to the major competitors who are operating in the area or region.

Rated Capacity and Production. The rated capacity, production volume, and percentage capacity utilization of the existing firms and of the project under consideration may be summarized as:

	Past years		Future years (projected)	
	Year 1	Etc.	Year 1	Etc.
Rated Capacity				
Co. A*				
Co. B*				
Project				
Total				
Production				
Co. A*				
Co. B*				
Project				
Total				
Percentage capacity utilization				
Co. A*				
Co. B*				
Project				
Weighted average				

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* To include expansion plans.

The past rated capacity reveals the past growth of the firms. The projected rated capacity gives an indication as to whether or not there will be an overcrowding in the industry.

The past percentage capacity utilization may reveal such conditions as the inadequacy of the market to support full production operations, the frequency of machine breakdowns, or the inadequacy of working capital.

The production of the existing firms and of the project under consideration may be projected only after considering the future rated capacity, projected demand to be met by local production, proposed prices, and marketing programs.

In order to illustrate the manner of presenting the production and rated capacity data, the 1970-1974 production and 1974 rated capacity of cement firms are shown in Exhibit 14.

Location. In an industry where the cost of freight is high in relation to the factory cost of the product, such as wheat flour, soft drinks or animal feeds, the location of the project in relation to the market areas will affect the project's sales volume. For instance, a cement plant in Davao will fare well if there were no other plants in Mindanao and Southern Visayas. On the other hand, if the rated capacity of the plants in these areas is more than the projected demand, the sales volume of the project will be adversely affected. Hence, the locations of other firms in the industry would have to be pinpointed.

Management and Ownership. The competitive positions of the firms in an industry is influenced not only by their rated capacity and locations but also by the capabilities of their managers and owners. For instance, a local subsidiary of a giant foreign firm with worldwide operations will have the necessary technical know-how and financial backing.

C. Prices

The selling price per unit which may be adopted by a project may be determined by considering the cost of importation, cost of production of local competitors, projected cost of production of the project under consideration, cost of transportation, and the prevailing prices at the various levels of the distribution channels. These data may be summarized as:

	Imported	Existing local manufacturers	Project under consideration
Cost of importation or production			
Domestic transportation cost			
Importers' or manufacturer's selling price			
Distributors' price			
Wholesalers' price			
Retailers' price			

The cost and selling prices for both the imported and locally produced items should be analyzed on a firm-to-firm basis.

The price to be adopted by the project may also be affected by laws such as the Flag Law and the Gold Mining Assistance Act.

Cost of Importation or Production. For an effective study, the cost of importation should be broken down as FOB cost, ocean freight, marine insurance, tariff duties, compensating tax, advance sales tax, specific tax, and other expenses. The effect of lowering the FOB cost, or of decreasing the tariff duties, on the feasibility of the project should be ascertained. The FOB cost will be lowered if the exporter uses the dumping price rather than the normal export price.

The foreign manufacturer-exporters may use dumping prices especially to offset a local project that is going to pioneer in the industry. For instance, in 1957, the C & F quotation of foreign wheat flour was about $3.00-$3.15 per 50-pound bag. However, immediately after the first Philippine wheat flour mill started operating in 1958, the quotation of foreign flour decreased to $2.65. Similarly, when Australia started her polyvinyl chloride plant, another country commenced exporting her production at $0.09 per pound as against the prevailing $0.12 world price.

The cost of production of the existing firms and other projects should be broken down by major items. If the cost of imported raw materials is a significant item, as in plants which are turning out G.I. sheets, wheat flour, or filled milk, the effect of possible tariff changes should be figured out. The proposals to change the tariff rates as those pending at the Tariff Commission should be studied.

Cost of Transportation. In case of imported items, the domestic transportation cost refers to the cost of shipping the product from the pier or importer's warehouse to the market centers. In case of locally-produced goods, this refers to the shipping cost from the factory.

The cost of transportation is significant in the case of goods which are bulky or heavy in relation to their value. The transportation cost of cement, for instance, can easily run up to 25% of the factory price.

Importers' and Manufacturers' Price. The importers and local manufacturers may be selling not only to the distributors or wholesalers, but also to the retailers or even consumers. In this case, the importers' or manufacturers' price to these various levels in the distribution channel should be obtained. Some local manufacturers may be selling on an ex-plant, ex-city warehouse, ex-pier, or on a delivered basis. The prices at the different delivery points should be ascertained.

Other Prices. If national, regional or provincial distributors are part of the distribution set-up in the industry, then the prices being offered by the distributors should preferably be studied also. The retailers' prices may or may not be prescribed by the importer or manufacturer. If there are no prescribed prices, the prices will vary from retailer to retailer, even if they are in the same vicinity. If the retailers' prices are set by the importer or manufacturer, there may be a uniform price throughout the Philippines, or the price may vary from region to region due mainly to the differences in the transportation costs.

Effects of the Flag Law. If a project is going to deal on items wherein the Philippine government or government-owned corporations are major users, the effect of the Flag Law (Commonwealth Act 138) should be examined. Under this law, government offices, agencies, and corporations are required to give preference to local entities in the procurement of goods. The law works this way: if the lowest bid by the foreign entities is over ₱2,000, and if the lowest bid by the domestic entities is not over 15% in excess of the lowest bid by the foreign entities, the local firm will be preferred. Thus, if the bids are as follows:

Local company A	-	₱11,450
Local company B	-	11,600
Foreign company X	-	10,000
Foreign company Y	-	10,500

the bid will be awareded to local company A.

The domestic entity is defined as one whose capital is at least 75% owned by Philippine citizens.

Price for the Project. Compared with the prevailing industry prices, the price to be adopted by the project may be higher, about the same, or lower.

The prices will be higher if quality products or popular brands are to be handled.

The price will be lower if the plant capacity is high. By selling at prices which are within the reach of the masses, the plant will be able to operate at a high level. The project may also decide to start with low prices, and gradually increase them as the product gains acceptance. It should be noted, however, that low prices may provoke a price war.

In the case of a manufacturing project, the distributors', wholesalers' and retailers' prices may be prescribed by the manufacturer. In this case, the basic price, quantity discounts, and prompt payment discount at the various levels have to be studied. If there will be no prescribed prices, then a rough calculation should be made of the probable mark-ups and selling prices to be made by the distributors, wholesalers, and retailers.

The project may have a special price for special parties. For instance, a battery manufacturer may have a lower price for the importers and manufacturers of flashlights and transistor radios.

D. Marketing Practices and Program

The industry marketing practices—terms of sales, distribution channels, transportation arrangements, promotions, brand name, and packaging—should be studied before the corresponding program for the project may be drawn up.

Terms of Sale. The goods may be sold either on: (1) cash advance basis; (2) cash basis; (3) account; or (4) installment. The terms of sales for a project will normally follow the industry practice. In the cement industry, for instance, during periods when the cash advance basis practice prevails (1950-1960) a new firm may have to follow suit.

If the goods are sold on account, the planned payment period and collection period may be patterned after those prevailing in the industry. The repayment period represents the number of days the customers are formally allowed to pay. This is normally much shorter than the collection period, or the period required for the seller to actually collect.

In the case of installment sales, the (1) basic installment price mark-up, (2) amount of downpayment, (3) amount of periodic payments, (4) total repayment period, and (5) interest rate, of the competitors should be used as the starting point in determining the installment plan to be adopted for the project. It may be noted at this point that some sellers of household appliances are marketing some items on a no down-payment basis. Regarding the repayment period, the period allowed for household appliances have already reached 24 months, and that for cars, 48.

Distribution Channels. The different channels through which the goods flow from the manufacturers or importers to the ultimate users should be traced before an appropriate channel can be selected for the project. In the textile industry, for instance, it may be noted that a large portion of the output of the textile mills is channelled to the three big Chinese national distributors. These distributors, in turn, fan out the goods to the wholesalers throughout the country. Sometimes, however, the mills sell directly to the wholesalers. The wholesalers sell the goods to as many as 500 retailers.

The distribution channels in three selected industries are shown in Exhibits 15 and 16.

A manufacturing project with a national market may have an exclusive distributor, may deal with national distributors, or may have its own sales outlets at the retail level in the form of branches or dealerships. The effectiveness of these alternative set-ups for a specific project should be ascertained.

The locations of the sales outlets of a project should be correlated with those of its competitors. Thus, in the case of a household appliances project with an intended national market, the locations of the sales outlets of the DRB Marketing Corporation, Philacor, Radiowealth Trading, and other firms dealing in appliances should be pinpointed.

Transportation Arrangements. The reliability, promptness, and cost of alternative ways of transporting the products to the market centers should be studied. If the transportation is by plane, ship, or train, the schedules and freight rates should be obtained. If the facilities of trucking firms or barging companies have to be availed of, the availability of their units has to be checked.

Promotions. Promotions are quite important in projects which will be selling consumer items with *brands*, such as cigarets, soft drinks, or detergents. Promotions include advertising, sales aids, and special programs. Two factors will have to be considered in determining the medium of promotions: the effectiveness or the effect on the sales and the covering cost.

Packaging. In order to help promote the sales, the products have to be in the right size and kind of packaging. The size of the packages will depend upon the market—sales to industrial users being either in bulk or in special bigger packages than those for the ordinary consumers. In the cement industry, for instance, the sales to big contractors may be in bulk although most of the sales are in 94-lb. bags.

The packing material should be both durable and attractive. Durability is the prime consideration for industrial goods, while attractiveness is very significant in consumer items.

Brand Name. Because of our preference for foreign products, foreign names are usually adopted for consumer items. Thus, our cigarets have American names, while our cigars have Spanish names. A local manufacturer of shoes uses a European name for its products.

The use of an established brand will mean a big difference in the sales volume. For this matter, the royalties on licensing agreements may be quite high primarily because well-known foreign brands are allowed to be used for local products.

It may be noted that in some lines, as in certain types of household appliances, the marketing organizations carry their own brands, and try to differentiate their brands from those of their competitors. This is notwithstanding the fact that their products and those of their competitors are made by the same suppliers out of the same kind of materials, the difference being only in the brand name, color, and exterior designs.

Exhibit 1

CARS
STATISTICAL STRAIGHT LINE PROJECTION
HISTORICAL DATA FOR 1956-1965; PROJECTIONS FOR 1966-1976

Year	Y Actual demand (Thousand units)	X	bX	X^2	XY	Yc Computed demand
1956	4.57	-9	-9.63	81	-41.13	.9
1957	5.28	-7	-7.49	49	-36.96	3.1
1958	5.49	-5	-5.35	25	-27.45	5.2
1959	4.39	-3	-3.21	9	-13.17	7.3
1960	9.02	-1	-1.07	1	- 9.02	9.1
1961	10.51	1	1.07	1	10.51	11.6
1962	5.96	3	3.21	9	17.88	13.8
1963	10.18	5	5.35	25	50.90	15.9
1964	24.45	7	7.49	49	171.15	18.0
1965	25.59	9	9.63	81	230.31	20.2
1966		11	11.77			22.3
1967		13	13.91			24.4
1968		15	16.05			26.6
1969		17	18.19			28.7
1970		19	20.33			30.9

(Continued)

Year	Y Actual demand (Thousand units)	X	bX	X^2	XY	Yc Computed demand
1971		21	22.47			33.0
1972		23	24.61			35.1
1973		25	26.75			37.3
1974		27	28.89			39.4
1975		29	31.03			41.6
1976		31	33.17			43.7
Total	105.44			330	353.02	

Y = Actual or historical demand (local sales and importations)

$$Yc = a + bX$$

$$a = \frac{EY}{n} = \frac{105.44}{10} = 10.54$$

$$b = \frac{EXY}{EX^2} = \frac{353.02}{330} = 1.07$$

Exhibit 2

CARS
STATISTICAL SEMI-LOG PROJECTION
HISTORICAL DATA FOR 1956-1965; PROJECTIONS FOR 1966-1976

Year	Y Actual demand (Thousand units)	Log Y*	X	X^2	X Log Y	Log Yc	Yc** Computed demand
1956	4.57	0.65992	-9	81	-5.93928	0.57216	3.7
1957	5.28	0.72263	-7	49	-5.05841	0.65214	4.5
1958	5.49	0.73957	-5	25	-3.69785	0.73212	5.4
1959	4.39	0.64246	-3	9	-1.92738	0.81210	6.5
1960	9.02	0.95521	-1	1	- .95521	0.89208	7.8
1961	10.51	1.02160	1	1	1.02160	0.97206	9.4
1962	5.96	0.77525	3	9	2.32575	1.05204	11.3
1963	10.18	1.00775	5	25	5.03875	1.13202	13.6
1964	24.45	1.38828	7	49	9.71796	1.21200	16.3
1965	25.59	1.40807	9	81	12.67263	1.29198	19.6
1966			11			1.37196	23.6
1967			13			1.45194	28.3
1968			15			1.53192	34.0
1969			17			1.61190	40.9

(Continued)

Year	Y Actual demand (Thousand units)	Log Y*	X	X²	X Log Y	Log Yc	Yc** Computed demand
1970			19			1.69188	49.2
1971			21				59.0
1972			23				70.8
1973			25				85.0
1974			27				102.0
1975			29				122.4
1976			31				146.9
Total	105.44	9.32074		330	13.19856		

Y = Actual or historical demand (local sales and importations)

$$\text{Log a} = \frac{\text{E Log Y}}{\text{n}} = \frac{9.32074}{10} = .93207$$

$$\text{Log b} = \frac{\text{EX Log Y}}{\text{E X}^2} = \frac{13.19856}{330} = .039995$$

1966 Log Yc = Log a + X Log b = .93207 + 11(.039995) = 1.37196

---

* Represents the logarithm (or log) of the amount in column Y. The log may be obtained from a table on common logarithm.

** Represents the antilog or the number of the amount in the column Log Yc. The antilog may be obtained from a table on common logarithm.

Exhibit 3

CARS
STATISTICAL PARABOLIC PROJECTION
HISTORICAL DATA FOR 1956-1965

Year	Y	X	X^2	X^4	XY	X^2Y	bX	cX^2	Yc
1956	4.57	-9	81	6,561	-41.13	370.17	-9.6	8.9	6.2
1957	5.28	-7	49	2,401	-36.96	258.72	-7.5	5.4	4.8
1958	5.49	-5	25	625	-27.45	137.25	-5.4	2.8	4.3
1959	4.39	-3	9	81	-13.17	39.51	-3.2	1.0	4.7
1960	9.02	-1	1	1	- 9.02	9.02	-1.1	0.1	5.9
1961	10.51	1	1	1	10.51	10.54	1.1	0.1	8.1
1962	5.96	3	9	81	17.88	53.64	3.2	1.0	11.1
1963	10.18	5	25	625	50.90	254.50	5.4	2.8	15.1
1964	24.45	7	49	2,401	171.15	1,198.05	7.5	5.4	19.8
1965	25.59	9	81	6,561	230.15	2,072.79	9.6	8.9	25.4
Total	105.44		330	19,338	352.86	4,404.19			

(Continued)

Y = Actual (historical) demand, as represented by local sales and importations

$$a = \frac{(EX^4)(EY) - EX^2(EX^2Y)}{n(EX^4) - (EX^2)^2}$$

$$= \frac{(19,338)(105.44) - 330(4,404.19)}{193,380 - 108,900} = \frac{2,038,999 - 1,453,383}{84,480}$$

$$= \frac{585,616}{84,480} = 6.9$$

$$b = \frac{EXY}{EX^2} = \frac{352.86}{330} = 1.07$$

$$c = \frac{n(EX^2Y) - EX^2(EY)}{n(EX^4) - (EX^2)^2}$$

$$= \frac{10(4,404.19) - 330(105.44)}{10(19,338) - (330)^2}$$

$$= \frac{44,042 - 34,795}{193,380 - 108,900}$$

$$= \frac{9,247}{84,460} = .11$$

Exhibit 4

CARS
STATISTICAL PARABOLIC PROJECTION
PROJECTIONS FOR 1966-1976

Year	X	X^2	bX	cX^2	Yc
1966	11	121	11.8	13.3	32.0
1967	13	169	13.9	18.6	39.4
1968	15	225	16.1	24.8	47.8
1969	17	289	18.2	31.8	56.9
1970	19	361	20.3	39.7	66.9
1971	21	441	22.5	48.5	77.9
1972	23	529	24.6	58.2	89.7
1973	25	625	26.8	68.8	102.5
1974	27	729	28.9	80.2	116.0
1975	29	841	31.0	92.5	130.4
1976	31	961	33.2	105.7	145.8

Where

$Yc = a + bX = cX^2$

$a = 6.9$ per Exhibit 3

$b = 1.07$ per Exhibit 3

$c = .11$ per Exhibit 3

Exhibit 5

CARS
PROJECTED DEMAND FOR 1966-1976 BASED ON DIFFERENT METHODS

	Based on local sales and importations					Based on car registration
	Arithmetical		Statistical			
	Straight line	Geometric curve	Straight line Ex. 1	Semi-log Ex. 2	Parabolic Ex. 4	Parabolic
Projected demand (thousand units)						
1966	27.9	33.8	22.3	23.6	32.0	22.2
1967	30.2	44.6	24.4	28.3	39.4	24.3
1968	32.5	58.9	26.6	34.0	47.8	26.4
1969	34.8	77.7	28.7	40.9	56.9	28.6
1970	37.1	102.6	30.9	49.2	66.9	30.8
1971	39.4	135.4	33.0	59.0	77.9	33.0
1972	41.7	178.7	35.1	70.8	89.7	35.3
1973	44.0	235.9	37.3	85.0	102.5	37.6
1974	46.3	311.4	39.4	102.0	116.0	39.7
1975	48.6	411.0	41.6	122.4	130.4	42.1
1976	50.9	542.5	43.7	146.9	145.8	44.4

(Continued)

	Based on local sales and importations					Based on car registration
	Arithmetical		Statistical			
	Straight line	Geometric curve	Straight line Ex. 1	Semi-log Ex. 2	Parabolic Ex. 4	Parabolic
Annual increase in demand (thousand units)						
From 1966 to 1967	2.3	10.8	2.1(b)	4.7	7.4	2.4
1967-1968	2.3	14.3	2.2(b)	5.7	8.4	2.0
1968-1969	2.3	18.8	2.1(b)	6.9	9.1	2.2
1969-1970	2.3	24.9	2.2(b)	8.3	10.0	2.2
1970-1971	2.3	32.8	2.1(b)	9.8	11.0	2.2
1971-1972	2.3	43.3	2.1(b)	11.8	11.8	2.2
1972-1973	2.3	57.2	2.2(b)	14.2	12.8	2.3
1973-1974	2.3	75.5	2.1(b)	17.0	13.5	2.3
1974-1975	2.3	99.6	2.2(b)	20.4	14.4	2.1
1975-1976	2.3	131.5	2.1(b)	24.5	15.4	2.4

(Continued)

	Based on local sales and importations					Based on car registration
	Arithmetical		Statistical			
Annual increase in demand as % of prior year's demand	Straight line	Geometric curve	Straight line Ex. 1	Semi-log Ex. 2	Parabolic Ex. 4	Parabolic
From 1966 to 1967(a)	8.2%	32%	9.4%	20%	23%	12.1%
1967-1968	7.6%	32%	9.0%	20%	21%	9.0%
1968-1969	7.1%	32%	7.9%	20%	19%	9.0%
1969-1970	6.6%	32%	7.7%	20%	17%	8.3%
1970-1971	6.2%	32%	6.8%	20%	16%	7.7%
1971-1972	5.8%	32%	6.4%	20%	15%	7.1%
1972-1973	5.5%	32%	6.0%	20%	14%	7.0%
1973-1974	5.2%	32%	5.9%	20%	13%	6.5%
1974-1975	5.0%	32%	5.6%	20%	12%	5.6%
1975-1976	4.7%	32%	5.0%	20%	11%	6.0%

(a) Increase in demand from 1966 to 1967, as a % of demand for 1966.

(b) If computation were not rounded off, the annual increase in demand should be uniform.

Exhibit 6

CARS
PROJECTED DEMAND FOR 1966-1970
BASED ON DIFFERENT METHODS

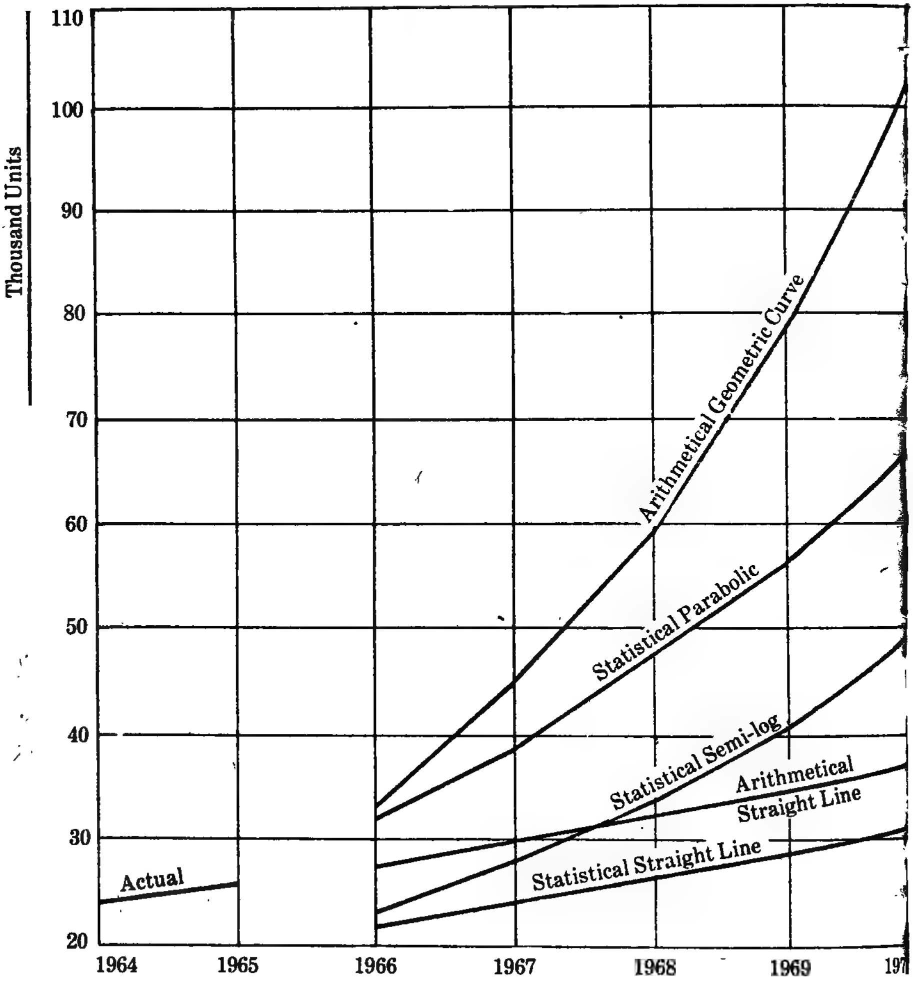

Exhibit 7

CARS
STATISTICAL METHODS
COMPUTATIONS OF STANDARD DEVIATIONS
(IN THOUSAND CARS)

		Straight Line			Semi-log		
	Y	Yc	Deviation		Yc	Deviation	
Year	Actual	Computed	Absolute	Squared	Computed	Absolute	Squared
1956	4.6	.9	3.7	13.69	3.7	.9	.81
1957	5.3	3.1	2.2	4.84	4.5	.8	.64
1958	5.5	5.2	.3	.09	5.4	.1	.01
1959	4.4	7.3	-2.9	8.41	6.5	-2.1	4.41
1960	9.0	9.1	- .1	.01	7.8	1.2	1.44
1961	10.5	11.6	-1.1	1.21	9.4	1.1	1.21
1962	6.0	13.8	-7.8	60.84	11.3	-5.3	28.09
1963	10.2	15.9	-5.7	32.49	13.6	-3.4	11.56
1964	24.4	18.0	6.4	40.96	16.3	8.1	65.61
1965	25.6	20.2	5.4	29.16	19.6	6.0	36.00
	105.5	105.1	.4	191.70	98.1	7.4	149.78

(Continued)

Exhibit 7
(continued)

CARS
STATISTICAL METHODS
COMPUTATIONS OF STANDARD DEVIATIONS
In Thousand Cars

	Parabolic		
	Yc	Deviation	
Year	Computed	Absolute	Squared
1956	6.2	-1.6	2.56
1957	4.8	.5	.25
1958	4.3	1.2	1.44
1959	4.7	- .3	.09
1960	5.9	3.1	9.61
1961	8.1	2.4	5.76
1962	11.1	-5.1	26.01
1963	15.1	-4.9	24.01
1964	19.8	4.6	21.16
1965	25.4	.2	.04
	105.4	.1	90.93

STANDARD DEVIATION (SD)

1. General formula — SD = $\sqrt{\frac{E(Y - Yc)^2}{N}}$

2. For straight line =

$$\sqrt{\frac{191.70}{10}} = \sqrt{19.17} = 4.37$$

3. For semi-log = $\sqrt{\frac{149.78}{10}} = \sqrt{14.98}$

$$= 3.86$$

4. For parabolic = $\sqrt{\frac{90.93}{10}} = \sqrt{9.09}$

$$= 3.02$$

TREND-FITTING OF STATISTICAL METHODS

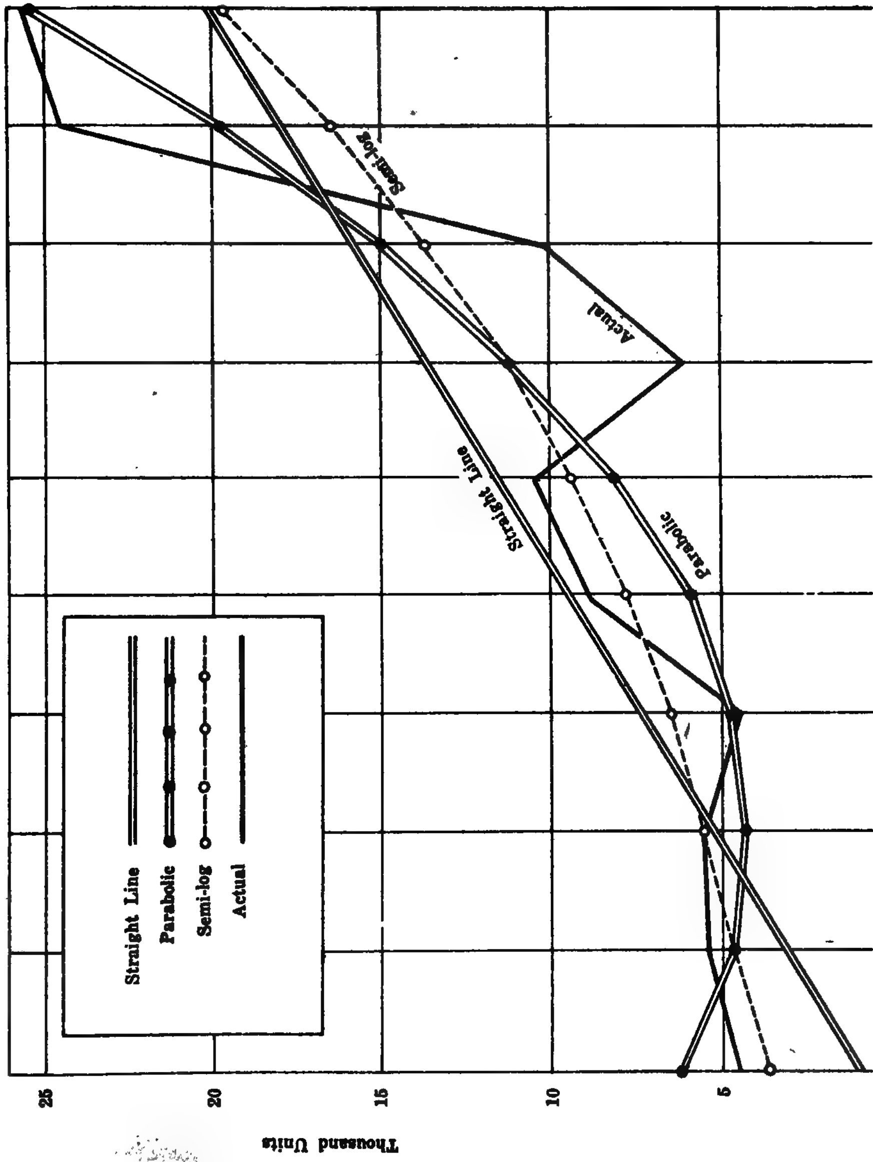

Exhibit 9

CAR REGISTRATIONS
STATISTICAL PARABOLIC PROJECTION
HISTORICAL DATA FOR 1956-1965; PROJECTIONS FOR 1966-1976

Year	Y	X	X^2	X^4	XY	X^2Y	bX	cX^2	Yc
1956	65.8	-9	81	6,561	-592.2	5,329.8			
1957	73.4	-7	49	2,401	-513.8	3,596.6			
1958	78.0	-5	25	625	-390.0	1,950.0			
1959	84.2	-3	9	81	-252.6	757.8			
1960	87.7	-1	1	1	- 87.7	87.7			
1961	94.2	1	1	1	94.2	94.2			
1962	100.2	3	9	81	300.6	901.8			
1963	116.1	5	25	625	580.5	2,902.5			
1964	138.9	7	49	2,401	972.3	6,806.1			
1965	150.3	9	81	6,561	1,352.7	12,174.3			
TOTAL	988.8		330	19,338	1,464.0	34,600.8			

(Continued)

Year	Y	X	X^2	X^4	XY	X^2Y	bX	cX^2	Yc
1966		11	121				48.8	28.1	168.1
1967		13	169				57.7	39.2	188.1
1968		15	225				66.6	52.2	210.0
1969		17	289				75.5	67.0	233.7
1970		19	361				84.4	83.7	259.3
1971		21	441				93.2	102.3	286.7
1972		23	529				102.1	122.7	316.0
1973		25	625				111.0	145.0	347.2
1974		27	729				120.0	169.1	380.3
1975		29	841				128.8	195.1	415.1
1976		31	961				137.6	223.0	451.8

Where

$Yc = a + bX = cX^2$

$a = 91.2$

$b = 4.44$

$c = .232$

(Continued)

COMPUTATIONS

$$Yc = a + bX = cX^2$$

$$a = \frac{(EX^4)(EY) - EX^2(EX^2Y)}{n(EX^4) - (EX^2)^2}$$

$$= \frac{(19{,}338 \times 988.8) - (330 \times 34{,}600)}{10(19{,}338) - (330)^2}$$

$$= \frac{19{,}125{,}282 - 11{,}418{,}000}{193{,}380 - 108{,}900} = \frac{7{,}707{,}282}{84{,}480} = 91.23$$

$$b = \frac{EXY}{EX^2} = \frac{1{,}464}{330} = 4.44$$

$$c = \frac{n(EX^2Y) - EX^2(EY)}{n(EX^4) - (EX^2)^2}$$

$$= \frac{10(34{,}600) - 330(989)}{10(19{,}338) - (330)^2}$$

$$= \frac{346{,}000 - 326{,}370}{193{,}380 - 108{,}900} = \frac{19{,}630}{84{,}480} = .232$$

Exhibit 10

HOTELS
PROJECTED DEMAND FOR 1966-1974 BASED ON NUMBER OF GUESTS

Year	In Thousand				No. of beds at 84% occupancy (4)
	Guests			No. of guests-nights (3)	
	Foreign (1)	Local (2)	Total		
1965	84*	20*	104		
1966	99	22	121	847	2,730
1967	117	24	141	987	3,180
1968	138	26	164	1,148	3,700
1969	163	29	192	1,344	4,330
1970	192	32	224	1,568	5,050
1971	227	35	262	1,834	5,920
1972	268	38	306	2,142	6,910
1973	316	42	358	2,506	8,080
1974	373	46	419	2,933	9,460

Notes:

(1) The number of foreign guests was projected at 18%*.

(2) The number of local guests was projected at 11%*.

(3) The number of guest-nights was obtained by multiplying the number of guests by 7*.

(4) The number of beds was obtained by dividing the number of guests-nights by 310 (84% occupancy rate x 365 days a year = 307 rounded off to 310).

---

* Actual or historical

(Continued)

Exhibit 10
(Continued)

HOTELS
PROJECTED DEMAND FOR 1966-1974 BASED ON NUMBER OF GUESTS

Year	Required as of mid-year			Additional rooms required during the year (7)
	Rooms			
	Single (5)	Double (6)	Total	
1966	1,360	680	2,040	68
1967	1,590	790	2,380	340
1968	1,850	920	2,770	390
1969	2,160	1,080	3,240	470
1970	2,520	1,260	3,780	540
1971	2,960	1,480	4,440	660
1972	3,460	1,730	5,190	750
1973	4,040	2,020	6,060	870
1974	4,730	2,360	7,090	1,030

Notes:

(5) The number of single rooms represents 50%* of the number of beds.
(6) The number of double rooms represents 50%* of the number of single rooms.
(7) The number of *additional* rooms *required* during the year represents the rooms required as of mid-year less the rooms required as of prior mid year. The 68 theoretical shortage for 1966 is represented by the 2,040 required rooms for mid-1966 less the 1,972* actual rooms of 19 hotels.

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* Actual or historical.

TEXTILE
STATISTICAL STRAIGHT LINE PROJECTION
HISTORICAL DATA FOR 1958-1965; PROJECTIONS FOR 1966-1976

Year	Y Actual demand (Million Yards)	X	X^2	XY	Computed demand Yc
1958	416	1	1	416	
1959	287	2	4	574	
1960	307	3	9	921	
1961	268	4	16	1,072	
1962	378	5	25	1,890	
1963	523	6	36	3,138	
1964	457	7	49	3,199	
1965	587	8	64	4,696	
Total	3,223	36	204	15,906	
1966		9			553
1967		10			587
1968		11			620
1969		12			653
1970		13			687
1971		14			721
1972		15			754
1973		16			787
1974		17			821
1975		18			854
1976		19			888

(Continued)

$$a = \frac{EX^2EY - EX(EXY)}{nEX^2 - (EX)^2}$$

$$= \frac{204(3{,}223) - 36(15{,}906)}{8(204) - (36)^2} = \frac{84{,}876}{336} = 252.6$$

$$b = \frac{nEXY - EX(EY)}{nEX^2 - (EX)^2}$$

$$= \frac{8(15{,}906) - 36(3{,}223)}{8(204) - (36)^2} = \frac{11{,}220}{336} = 33.4$$

$$Y\ 1966 = a + bX = 252.6 + 33.4(9) = 553$$

$$Y\ 1967 = a + bX = 252.6 + 33.4(10) = 587$$

Note: The formulas for "a" and "b" above differ from the ones shown in Exhibit 1 because in Exhibit 1, the value of "x" for the past years (1956 to 1965) was zeroed.

Exhibit 12

TEXTILE
STATISTICAL SEMI-LOG PROJECTION
HISTORICAL DATA FOR 1958-1965; PROJECTIONS FOR 1966-1976

Year	Y	Log Y	X	X^2	X Log Y	Log Yc	Yc
1958	416	2.61909	1	1	2.61909		
1959	287	2.45788	2	4	4.91576		
1960	307	2.48714	3	9	7.46142		
1961	268	2.42813	4	16	9.71252		
1962	378	2.57749	5	25	12.88745		
1963	523	2.71850	6	36	16.31100		
1964	457	2.65992	7	49	18.61944		
1965	587	2.76864	8	64	22.14912		
Total	3,223	20.71679	36	204	94.67580		
1966			9			2.74493	555
1967			10			2.77946	602
1968			11			2.81399	652
1969			12			2.84520	700
1970			13			2.88305	764
1971			14				827
1972			15				896
1973			16				970
1974			17				1,051
1975			18				1,138
1976			19				1,232

(Continued)

$$\text{Log a} = \frac{\text{EX}^2(\text{E Log Y}) - \text{EX}(\text{E X Log Y})}{\text{n}(\text{EX}^2) - (\text{EX})^2}$$

$$= \frac{204(20.71679) - 36(94.67580)}{8(204) - (36)^2} = \frac{4{,}226 - 3{,}408}{1{,}632 - 1{,}296}$$

$$= \frac{818}{336} = 2.434$$

$$\text{Log b} = \frac{\text{n}(\text{E X Log Y}) - \text{EX}(\text{E Log Y})}{\text{n}(\text{EX}^2) - (\text{EX})^2}$$

$$= \frac{8(94.67580) - 36(20.71679)}{8(204) - (36)^2} = \frac{11.60520}{336} = .03453$$

$$\text{Log Y 1966} = \text{Log a} + \text{X Log b}$$

$$= 2.43416 + 9(.03453) = 2.74493$$

$$\text{Y 1966} = \text{Antilog of } 2.74493 = 555$$

$$\text{Log Y 1967} = \text{Log a} + \text{X Log b}$$

$$= 2.43416 + 10(.03453) = 2.77946$$

$$\text{Y 1967} = \text{antilog of } 2.77946 = 602$$

Note: The formulas for "Log a" and "Log b" shown above differ from the ones shown in Exhibit 2 because in Exhibit 2, the value of "X" for the past years (1956 to 1965) was zeroed.

TEXTILE
STATISTICAL PARABOLIC PROJECTION
HISTORICAL DATA FOR 1958-1965; PROJECTIONS FOR 1966-1976

Year	Y	X	X^2	X^4	XY	X^2Y	bX	cX^2	Yc
1958	416	-7	49	2,401	-2,912	20,384	-116.9	147	
1959	287	-5	25	625	-1,435	7,175	- 83.5	75	
1960	307	-3	9	81	- 921	2,763	- 50.1	27	
1961	268	-1	1	1	- 268	268	- 16.7	3	
1962	378	1	1	1	378	378	16.7	3	
1963	523	3	9	81	1,569	4,707	50.1	27	
1964	457	5	25	625	2,285	11,425	83.5	75	
1965	587	7	49	2,401	4,109	28,763	116.9	147	
Total	3,223		168	6,216	2,805	75,863			
1966		9	81				150.3	243	732
1967		11	121				183.7	363	886
1968		13	169				217.1	507	1,063
1969		15	225				250.5	675	1,264
1970		17	289				283.9	867	1,490
1971		19	361				317.3	1,083	1,739
1972		21	441				350.7	1,323	2,013
1973		23	529				384.1	1,587	2,310
1974		25	625				417.5	1,875	2,632
1975		27	729				450.9	2,187	2,977
1976		29	841				484.3	2,523	3,346

(Continued)

$$a = \frac{EX^4(EY) - EX^2(EX^2Y)}{n(EX^4) - (EX^2)^2}$$

$$= \frac{6{,}216(3{,}223) - 168(75{,}863)}{8(6{,}216) - (168)^2} = \frac{7{,}289{,}184}{21{,}504} = 339$$

$$b = \frac{EXY}{EX^2} = \frac{2{,}805}{168} = 16.7$$

$$c = \frac{n(EX^2Y) - EX^2(EY)}{n(EX^4) - (EX^2)^2} = \frac{8(75{,}863) - 168(3{,}223)}{8(6{,}216) - (168)^2} = \frac{606{,}904 - 541{,}464}{49{,}728 - 28{,}224}$$

$$= \frac{65{,}440}{21{,}504} = 3$$

$$Y\ 1966 = a + bX + cX^2$$

$$= 339 + 150.3 + 243 = 732$$

$$Y\ 1967 = 339 + 183.7 + 363 = 886$$

Exhibit 14

CEMENT INDUSTRY PRODUCTION AND CAPACITY MILLION 94-LBS BAGS

Company	Plant Site	Actual production					Capacity
		1970	1971	1972	1973	1974	1974
1. Marinduque	Rizal	12.9	9.9	10.0	12.1	9.9	18.0
2. Universal	Cebu	4.7	5.7	5.8	6.3	3.3	16.5
3. Northern	Pangasinan	-	-	10.0	11.8	10.6	15.0
4. Republic	Bulacan	9.6	8.9	5.2	8.5	9.0	15.0
5. Filipinas	Rizal	4.6	6.0	6.0	7.0	5.4	13.2
6. Midland	Rizal					1.0	12.0
7. Floro	Misamis Or.		.2	2.5	7.6	7.0	10.8
8. Continental	Bulacan			1.0	4.7	4.1	10.5
9. Fortune	Batangas	.7	7.0	5.8	7.4	5.3	9.0
10. HI Cement	Bulacan	4.6	6.5	5.4	5.1	3.1	9.0
11. Iligan	Iligan		2.2	3.2	3.7	4.6	9.0
12. Rizal	Rizal	5.5	4.8	4.1	4.2	3.4	8.4
13. Apocemco	Cebu	.6	.3	2.6	3.1	1.7	6.0
14. Bacnotan	La Union and Davao	8.8	6.2	5.9	7.0	7.2	9.0
15. Pacific	Surigao	1.3	1.4	1.6	.7	.1	4.2
16. Luzon	Bulacan	2.5	2.2	2.5	2.9	2.3	3.6
17. Mindanao	Iligan	1.9	2.8	2.2	2.9	3.6	3.6
Total		57.7	64.1	73.8	95.0	81.6	172.8

Exhibit 15

TEXTILE AND HOUSEHOLD APPLIANCE INDUSTRIES DISTRIBUTION CHANNELS

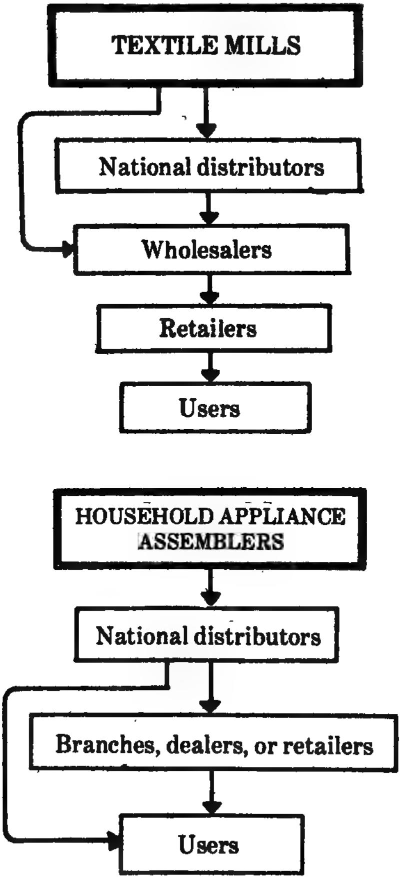
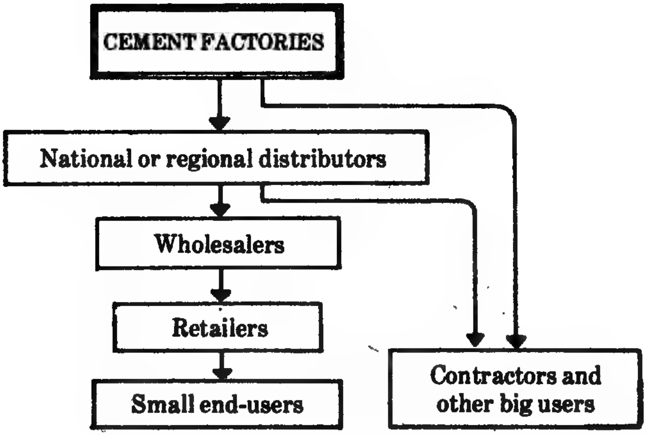


Exhibit 16

CEMENT INDUSTRY DISTRIBUTION CHANNELS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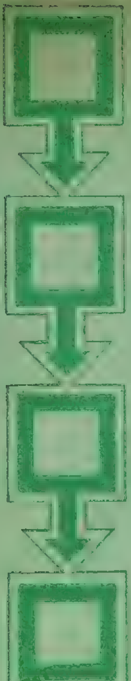
National or regional distributors
Wholesalers
Retailers
Small end-users
Contractors and other big users



Preparing PROJECT FEASIBILITY STUDIES

for Philippine Business Enterprise

VOLUME TW

Vicente Mur

Foreword b

VICENTE T. PATERN

Chairman, Board of Investmen

Secretary, Department of Indu

Preparing
PROJECT FEASIBILITY STUDIES
FOR PHILIPPINE BUSINESS ENTERPRISES

Volume 2

VICENTE MURO

Foreword by
VICENTE T. PATERNO
Chairman, Board of Investments
Secretary, Department of Industry

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Preparing
PROJECT FEASIBILITY STUDIES
FOR PHILIPPINE BUSINESS ENTERPRISES

Vicente Muro

Volume 1

Failures and successes of Philippine business projects

Philippine projects which failed. Causes of business failures.

Nature of project feasibility studies

Parties requiring studies. Limitations and utility of studies. Preparation and revision. Time and cost. History.

Outlines of feasibility studies for projects in 9 industries

Manufacturing. Mining Cattle ranch. Coffee plantation. Fishing. Subdivision. Hotel. School. Market.

Management study

Project construction. Project scheduling and PERT. Form of business organization. Ownership. Internal structure. Personnel.

Marketing study

Consumption, importations, and local production. Arithmetical and statistical demand projections. Product substitutes. Local competition. Pricing. Distribution channels, promotions, and marketing program.

Volume 2

Technical study

Manufacturing process. Machinery specifications and supplier. Rated capacity and location. Layout. Buildings and other structures. Raw materials. Power, water, and other utilities. Industrial waste.

Taxation study

Tax provisions. Tax exemptions. Tax aspects of form of business organization.

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Financial requirements. Alternative sources of financing. Debt-equity ratio. Policy on outside financing. Effective cost of financing. Maximum amount of financing.

Financial study

Financial projections. Assumptions. Sales. Costs and expenses. Financial evaluation. Break-even point analyses. Discounted cash flow rate of return. Accounting rate of return. Cash payback.

Social desirability of projects

Government revenues. Foreign exchange. Development of industries. Benefits to employees and consumers. Social rate of return.

The Author

VICENTE MURO

Author, *How to Study & Finance Philippine Enterprises*
Author, *Financing Philippine Business Enterprises*
Editor, *Preparation of Feasibility Studies for Business Projects in the Philippines*

Professional management positions

President, Diamond Farms, Inc.
General manager, HI-Daiwa House Philippines, Inc.
General manager, HI-Motors, Inc.
Vice-president, House of Investments, Inc.

Former professional management positions

Director, Zamboanga Wood Products, Inc.
Director, Rockland Marble, Inc.
Vice-president, Investment Managers, Inc.
Manager, Investment Banking Division, House of Investments, Inc.
Treasurer, Mariwasa Distributors, Inc.

Former management consultancy positions

Vice-president, Managers and Consultants, Inc.
Analyst, Management Services Division, Sycip, Gorres, Velayo & Co.

Former government positions

Acting *director*, Presidential Economic Staff
Consultant, Program Implementation Agency

Former positions in trade and professional associations

Director, Money Market Association of the Philippines
Vice-president, Financial Executives Association of the Philippines
Chairman, Philippine Institute of Certified Public Accountants Financial Management Committee

Former participations in business seminars

Syndicate *Chairman*, World Bank Project Evaluation Course, U.S.A.
Director, Chamber of Commerce of the Philippines Seminar on Preparing Project Studies and Financing Business Enterprises
Consultant, Philippine Chamber of Industries Seminar on Financing Business Enterprises

Consultant, Program Implementation Agency Seminars Series on Project Studies and Project Evaluation

Director, Philippine Center for Professional Management Seminars Series on Project Studies

Lecturer, business seminars sponsored by the Central Bank, GSIS, Dept. of Education, Loans and Investments Council, Office of Economic Coordination, Sugar Development Committee, Chamber of Commerce of the Philippines, Phil. Association of Real Estate Boards, Manila Board of Realtors, Pasay Board of Realtors, Caloocan Board of Realtors, Phil. Institute of CPAs, International Chamber of Commerce of Albay, Savings and Loan Associations, Operation Brotherhood International, Council of Welfare Agencies, UP-Phil. Executive Academy, UP-Institute of Samll Scale Industries, UP-Cebu Graduate School, University of Wisconsin, La Salle Graduate School, University of the East, Phil. College of Commerce, Ateneo de Davao, Phil. Center for Professional Management, Executive Development Academy, CCP Securities Corp., Special Services Corporation, Economic Development Foundation, and several other organizations.

FOREWORD

The establishment of new industries, as well as the expansion of existing capacities should be properly planned so that precious capital and entrepreneurial time and effort may not be wasted. A useful tool in the selection and planning of projects is a feasibility study.

The publication of this book, "Preparing Project Feasibility Studies for Philippine Business Enterprises," is very timely. As part of the government goal to attain sustained economic growth, the number of new enterprises being established now has reached record levels.

Since this book not only covers the procedures in preparing project studies but also gives relevant information on Philippine business and laws, the book may be of use not only to local business enterprises but also to foreign firms desiring to make investments in our country.

For the past 7 years, the author's prior book, "How to Study and Finance Philippine Business Enterprises" has helped project proponents, financial institutions, and government offices, in preparing project studies and in evaluating projects.

We hope this new book will prove to be even more useful.

VICENTE T. PATERNO
Chairman, Board of Investments
Secretary, Department of Industry

Preface

This book serves as a practical tool in the preparation of project feasibility studies. This is intended primarily for those who are responsible for the development of projects and the preparation of project studies for the ultimate use of: industrial, commercial, and agricultural firms; financial institutions; and private investors. These include executives of management and consulting firms, advertising agencies, accounting firms, realty firms, machinery suppliers, building contractors, engineering firms, tax and corporate law offices, as well as businessmen, project proponents and promoters.

In this book, concentration is given to new industrial projects. However, most of the basic principles as well as some of the illustrations apply as well to new projects and expansion programs of growing concerns in varied industries.

Acknowledgments. The preparation of a publication as comprehensive as this would be impossible if it were not for the wholehearted support of the officials of the following private firms, government offices, and international organizations: Board of Investments, National Economic and Development Authority, Philippine Cement Corporation, DCCD Engineering Corporation, University of the Philippines, Metropolitan Waterworks and Sewerage System, National Power Corporation, Manila Electric Company and International Bank for Reconstruction and Development.

Special mention may be made of the following who contributed some materials for the Technical Study: Alfredo L. Juinio of the National Irrigation Administration and formerly of the DCCD Engineering Corporation; and Lamberto Un Ocampo, Perlito C. Reyes, and Rodolfo N. Ferrer, all of the DCCD Engineering Corporation.

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VICENTE MURO

Makati, Rizal, August, 1975

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Chapter I

Technical Study

FOR A FACTORY, THE PURPOSE OF THE TECHNICAL study is to select the manufacturing process, machinery capacity and design, machinery supplier, plant location, plant layout, structures specifications, and materials and utilities specifications and sources. The technical and economic feasibility of a project depends to a great extent on a careful study of these factors.

The primary consideration need not be that the project must have the most modern plant design. The real test is: will the cash generation from the project be large enough to attain the maximum rate of return on the investment?

In order to better guide the project management, separate sets of profitability and cash flow estimates may be prepared for the project. Thus, if the management is seriously considering two alternative locations, two sets of financial estimates may be prepared—one for each possible location.

During the study stage, the management should consider the needs of the project not just for the first few years of operations, but for the entire expected life. Thus, in deciding on the machinery, plant site, and building design, the management should provide for possible subsequent expansion.

A. Manufacturing Process

1. CHOICE OF THE PROCESS

In some industries, as in the car assembly, the manufacturing process is not complicated by alternative choices. This is not true, however, in certain industries, like the pulp or cement industries, where there are two or more processes available. In such cases. adequate investigation should be conducted to determine the process to be adopted for the project. The type of process to be used depends on:

1. The characteristics of the available raw materials;
2. The desired quality or specifications of the end-product; and
3. The manufacturing costs, and initial investment required.

The application of the above factors on the selection of manufacturing process for pulp and cement projects is discussed below.

If the product to be locally manufactured is covered by a licensing agreement, the foreign licensor may recommend the manufacturing process.

Pulp Manufacture. In pulp manufacture, any one of the following processes may be used:

1. Mechanical process
2. Sulfate process
3. Sulfite process
4. Soda process

In the first-named process, the wood is converted into pulp by mechanical means. In the other processes, chemical reactions take place.

The *raw materials* available may be the deciding factor in the choice of the process. Thus, if the materials are short-fibered hardwoods, the soda process is recommended.

The desired type of *finished product* will be a factor to reckon with also. Thus, if the pulp will be used in the manufacture of kraft paper, the sulfate process has to be adopted.

Finally the *cost* of manufacturing has to be considered also. Because it has the simplest operations among the four processes named, the mechanical process has the lowest manufacturing cost. Hence, if the pulp will be used for cheap paper products like newsprint, the mechanical process has to be employed.

Processes Adopted in the Philippines. The Paper Industries Corporation of the Philippines adopted the mechanical and the sulfate processes. The mechanical process for the manufacture of pulp is intended for newsprint. The sulfate process is for kraft paper. The Bataan Pulp and Paper Mills, Inc. is using the sulfate process.

Cement Manufacture. In cement manufacture, there are two conventional processes—the wet, and the dry. The differences are:

	Wet process	Dry process
1. Moisture content of limestone	High	Low
2. Grinding and blending is done with	Water slurry	Dry materials
3. Place for mixing the materials	Grinding mills and correcting tanks	Grinding mills only
4. Mixing of raw materials	More accurate	Less accurate
5. Fuel used in kiln	More	Less
6. Finished cement	More uniform	Less uniform

As the wet process uses water, more fuel for firing the materials would be required later on. It was estimated, for instance, that the average fuel requirement for the wet process is 1,000,000-1,300,000 BTU per barrel, while that for the dry process is only 600,000-700,000 BTU. This leads to a higher operating cost for the wet process, specially if the fuel at the plant site is costly.

On the other hand, since the wet process uses water, a more thorough mixture of the materials is afforded, resulting in a more uniformly-finished cement. Recent developments in the industry, however, have evolved designs of dry process machinery which produces cement which is homogeneous enough for commercial purposes.

A third type of manufacturing process has been developed lately in Japan. Called the lime calcination process, it affords reductions in power and labor requirements, while increasing the quality and quantity of production. The basic principle involved in the new process is the precalcination of the limestone in the lime kilns so as to convert the materials into quicklime.

Processes Adopted in the Philippines. Up to 1954, all the cement plants established in the Philippines adopted the wet process because of the resultant high quality products. These plants are:

	Plants	Year established
1.	Rizal Cement Company, Inc.	1914
2.	Apo Cement Corporation (formerly CEPOC)	1922
3.	Philippine Portland Cement Co., Inc.	1949
4.	Bacnotan Cement Industries, Inc.	1954

With the recent innovations in the design of the dry process equipment, the product quality from this process has improved. Because of this improvement, and because of lower operating costs, all of the following plants established after 1964 use the dry process.

	Plant	Year established
1.	Republic Cement Corporation	1957
2.	Universal Cement Co., Inc.	1960
3.	Mindanao Portland Cement Corp.	1964
4.	Filipinas Cement Corp.	1964
5.	HI Cement Corp.	1968
6.	Luzon Cement Corp.	1968
7.	Northern Cement Corp.	1970
8.	Fortune Cement Corp.	1970
9.	Iligan Cement Corp.	1971
10.	Floro Cement Corp.	1971
11.	Continental Cement Corp.	1972

It may be noted, however, that one of the above plants encountered technical difficulties due to the high moisture content (12%) of its raw materials. As mentioned earlier, the dry process is suitable only for materials with low moisture.

The following are the ones established after 1954 which opted for the wet process:

	Plant	Year established
1.	Pacific Cement Corp.	1967
2.	Bacnotan Consolidated Industries, Inc. Cement Plant No. 2 (located in Davao City)	1968
3.	Island Cement Plant of Marinduque Mining & Industrial Corp.	1969
4.	Midland Cement Corp.	1974

2. DESCRIPTION OF THE PROCESS

In the project study report, the selected manufacturing process should be described. Alternative processes should also be preferably discussed and commented upon; their adavantages and disadvantages with regard to the particular project should be cited. This will enable the party to whom the report is addressed, to understand the process, and the reasons for its choice. The process flow sheet may also be included in the report. An illustrative flow sheet is shown in Exhibit 1.

B. Machinery and Equipment

After the manufacturing process has been selected, the plant capacities and machinery design and specifications are worked out. The supplier is selected afterwards. The study covers both the major units, and the auxiliary equipment—transport, materials handling, and standby units.

PLANT CAPACITY

Plant capacity refers to the expected actual capacity. For a new project, the *expected actual capacity* is commonly based on the *rated capacity*. It should be noted, however, that there are differences between these two concepts because:

1. Unreliable machinery suppliers or suppliers' representatives overstate the rated capacity.

2. Reputable firms as certain German suppliers understate the rated capacity so as to provide for an allowance.

3. Some adjustments in the machinery may be made by local engineers so as to make the actual capacity much higher than rated capacity. In a wheat four mill, for instance, the capacity was increased considerably by adjusting the speed of the major equipment. In a ceramics factory, by simply increasing the temperature of the kiln, the processing time was reduced by 30% thereby increasing the daily output.

Determinants of the Plant Capacity. The initial plant capacity depends on:

1. The expected market;
2. The available financing;

3. The available raw materials;
4. The available plant sizes; and
5. The cost of subsequent expansion.

The initial capacity should normally be higher than the expected sales volume for the first year of operation. However, only in rare cases may the initial capacity be pegged to the expected sales for the tenth year of operation. The reason for this is that, if this is done, there will be a substantial unutilized facility for the first years of operations.

The acquisition of machinery may be financed by outside sources. It should be noted, however, that outside financing is only for a certain portion of the total cost, at most 60%. Hence, the balance must be financed by the proponents themselves. If the available equity capital is limited, the firm may not be able to initially acquire a large plant.

In industries that will process exhaustible deposits as in cement manufacture or clay processing, the plant situated near the deposits should not be large enough to exhaust its reserves for a short period of time—at least not for less than five years. For a fish cannery, the capacity should not be bigger than what is necessary to process the catch during the fishing season.

These three factors—market, financing, and raw materials—tend to put an upper limit on the plant size. On the other hand, the initial size should not be so small as to make it an uneconomic plant size.

If the market, financing, and raw materials can sustain a plant size of only five tons a day, but the smallest economic plant size is much higher—say 20 tons a day—then the project has to be abrogated.

To determine initial plant capacity, assume that adequate financing and raw materials are available, that the smallest economical size is 20 tons a day, and that the market can support the following:

1980	- 20 tons a day
1981	- 22
1982	- 24
1983	- 27
1984	- 30

What should be the initial plant capacity—20 or 30 tons a day?

This will depend, among others, on the cost of the initial plant and the cost of the subsequent expansion. If the combined cost of the initial 20-ton plant and the subsequent expansion to 30 tons is only slightly higher than the cost of an original 30-ton plant, then it may be advisable to start with the 20-ton plant.

Machinery Capacities. Ideally, the capacities of the individual units of machinery should be equal to the over-all plant capacity. That is, if the units of machinery in a cement plant—crushers, ball mills, kilns, finish grinders, etc.—are operated at full capacity for the same period of time, the output of one unit would be equal to the input of the succeeding unit.

In some industries, however, this ideal set-up is seldom attained. This is because the individual units have different economical sizes. In cigaret manufacturing, for instance, an economical size cutting machine (used in the cutting of tobacco strips) can process every hour tobacco which can be used for the manufacture of about 1,500,000 pieces of cigarets. On the other hand, the convenient capacity of a cigaret making machine may be only 100,000 pieces per hour. Thus, if the initial plant capacity is set at 500,000 pieces per hour, the plant has to obtain one cutting machine with a capacity of 1,500,000 cigarets per hour, and five units of cigaret making machine with a combined capacity of 500,000 pieces. If the over-all plant capacity has to be doubled to 1,000,000, the plant will just acquire five additional units of cigaret making machines.

2. DESIGN

Studies should be made on the degree of mechanization, model of the machinery, and specifications.

Degree of Mechanization. Two factors should be considered in deciding on the degree of mechanization:

1. Quality of the products;
2. Cost of machinery and of operations.

In some product lines highly mechanized operations do not produce top quality items. For instance, the higher-priced embroidery and rubber footwear items are those produced with a low level of mechanization.

If the quality of the product is not affected by the degree of mechinization, then the initial cost of the machinery should be matched with the cost of operations. Highly-mechanized plants, as those with electronically-controlled operations, entail relatively high investment. However, the annual cost of labor is minimized.

In some cases, it may be impractical to mechanize certain operations due to legal provisions. The National Internal Revenue Code, for instance, provides that the specific taxes on mechanically-packed cigarets shall be 220% of those on manually-packed ones. Because of this provision, all cigaret manufacturers in the Philippines find it cheaper to have the cigarets packed manually. In all other countries, cigarets are mechanically-packed because they do not have similar laws.

Model of Machinery. As a general rule, machinery which are still in the experimental stage of development, or which are already obsolete, should be avoided.

The machinery to be purchased should normally be limited to the latest brand-new commercial models, or to second-hand machinery which are not yet obsolete. Although the initial cost of brand-new machinery is relatively high, they are more efficient and economical in operation. On the other hand, second-hand machinery require low initial outlay although operating cost may be more due to higher requirements of personnel, power, raw materials and spare parts. Furthermore, the operating time per year may be lower due to expected machine breakdowns.

The final decision as to what should be acquired—brand-new or second-hand—will depend on: (1) the expected size, duration, and certainty of the market; and (2) the financing available. One of the industries which found it advisable to obtain second-hand machinery in the 1960's is the sugar milling industry. The machinery units for the sugar centrals of the Agro-Industrial Development of Silay-Saravia, and of the First Farmers Milling Co., came from sugar mills in Puerto Rico.

Specifications. When the project study is already in an advanced stage the specification of the various units of machinery should be drawn up. The specifications will include the following to the extent that they are applicable: materials input and output—quantity and specifications; capacity and processing time; physical dimensions; materials of construction and construction design; accessories; and installation, insulation, piping, instrumentation, electrical, steam, water, and operating labor requirements.

3. SUPPLIER

In the choice of the machinery supplier, the following factors should be evaluated:

1. Qualifications of possible suppliers
2. Cost of machinery and terms of payment.

Since the machinery offered by different suppliers vary in their capacities, performance, useful life, cost of operations, and other items, these should be compared. After deciding on the major supplier, a detailed listing of the machinery to be obtained from them should be prepared.

Qualifications of Suppliers. The qualifications of the suppliers refer to their ability to fabricate the machinery as specified, to deliver the machinery on time, and to meet the guarantees. These may be ascertained by reviewing their past performance.

When financing is obtained from outside sources, the contract may be awarded only to suppliers of a given nationality. The financing sources and the required country of procurement are:

	Sources of financing*	Required country of procurement
1.	Asian Development Bank	Member-countries of the bank
2.	Export-Import Bank of U.S.	U.S.
3.	Export Development Corporation of Canada	Canada
4.	Kreditanstalt fur Wiederaufbau	Germany
5.	Export-Import Bank of Japan	Japan

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* The member-countries of the Asian Development Bank, as well as the terms of financing of the above sources, are shown in another publication, "Financing Philippine Business Enterprises," by Vicente Muro.

Whenever practical, a competitive bidding may be called. Some lending institutions including the World Bank require that the machinery be obtained on a competitive basis.

Cost and Terms of Payment. As an aid in determining the cheapest machinery, the total cost of the machinery and services being offered by different suppliers and the terms of payments may be compared.

The payments may not be for the machinery only, but also for:

1. Royalty on the manufacture of products under a licensing agreement
2. Manufacturing process selection
3. Preparation of machinery design and specifications
4. Raw materials testing
5. Plant location selection
6. Installation, instrumentation, piping, insulation and electrical connections
7. Trial run.

The payments may be for the machinery and all the items listed above, if the foreign licensor prepares all the engineering studies and supplies most of the machinery requirements.

Different machinery suppliers offer varying credit terms. Some suppliers may sell for cash but will help the buyer secure financing elsewhere. Other suppliers sell on credit terms, with different down-payment requirements, payment periods, and interest rates.

Cost of Machinery. The cost of imported machinery may be estimated in this manner:

FOB supplier's plant (U.S.)	$87,000
Crating	1,800
Inland freight	1,200
FOB shipping point (Baltimore)	$90,000
Ocean freight	8,000
Marine insurance	1,000
Other dollar charges	1,000
CIF, Manila - in dollars	$100,000
CIF, Manila - pesos (assume ₱7 = $1)	₱ 700,000
Custom duty - 10% of ₱700,000	70,000
Charges of local banks, wharfage, arrastre, brokerage and other charges	6,000
Compensating tax	54,000
Storage fee in bonded warehouse	2,000
Transportation to plant site	3,000
Installation cost	165,000
Installed cost	₱1,000,000

The quotation of the U.S. machinery supplier may be (1) FOB supplier's plant, (2) FOB shipping point—Baltimore, or (3) CIF Manila. In the first case, the Philippine importer takes care of the freight from the supplier's plant to Baltimore, and the ocean freight to Manila, as well as the marine insurance. In the second case, the project does not shoulder the cost of the freight from the supplier's plant to Baltimore but pays for the ocean freight and insurance from Baltimore to Manila.

If the quotation is FOB U.S., the foreign machinery supplier should be requested to estimate the ocean freight. However, if the weight and volume of the machinery are available, the rate may be obtained from the local shipping agencies. The standard weight-volume relationship is 1,000 kilos to 40 cubic feet. This means that if the machinery weighs 1,000 kilos and occupies 80 cubic feet, the freight will be based on the volume; if it weighs 1,200 kilos and occupies 40 cubic feet, the freight will be based on the weight.

The rate of marine insurance may be obtained from local insurance firms or agencies. The rate depends on the following major factors:

1. *Risks* covered—whether it assumes:
   a. All risks
   b. With average, breakage, theft, pilferage, and nondelivery
   c. With average
   d. Free of particular average.
2. Places where the cargo will be *loaded*—whether it is
   a. Under deck
   b. On deck
3. Whether or not the cargo contains *glass parts.*

The CIF-Manila—U.S. dollars should be converted to pesos based on the expected future rate of exchange. The current $1.00 = ₱7.00 rate was used in the illustration.

Most items of machinery are subject to 10% ad valorem customs duties. It is assumed in the illustration that this is the rate. The custom duties and compensation tax are discussed further in Chapter II.

The installation cost should cover some or all of the following items:

1. Engineering fees
2. Contractors' fee

3. Labor and supervision
4. Materials for foundations, supports, platform, insulation, instrumentations, piping and electrical instruments
5. Contingency.

Machinery to be Acquired from the Major Supplier. The list ot machinery recommended by the major supplier should be checked. It is likely that it is more economical to substitute some items with other units furnished by: the same foreign supplier; other foreign suppliers; or even local fabricators. There are local factories, for instance, which can manufacture selected types of size reduction equipment. Some of the items proposed by the major supplier, such as fumes collector, may be deleted as they are not vital to the operations.

C. Plant Location

The following factors should be examined in deciding on the plant location:

1. Distance from the sources of raw materials and markets
2. Transportation and other facilities
3. Labor—availability and cost
4. Power—availability and cost
5. Water—availability and quality
6. Waste disposal
7. Taxes and tax exemptions
8. Land—availability, characteristics, and cost.

The location should enable the project to have the lowest initial investment and the lowest cost of operations. In certain cases, it may be advisable to decentralize the manufacturing operations. The Filipinas Cement Corporation, for instance, found it feasible to divide the manufacturing preparation and clinker burning on one hand, and the finish grinding and packing on the other. The first plant is located in Teresa, Rizal, where the limestone, mari clay, and diorite raw materials abound. The finishing plant is located in Pasig, Rizal, which is nearer the market, with sufficient power, and whose site has better weight-bearing capacity. Another advantage under the set-up is that clinker is more economical to transport than bagged cement.

1. DISTANCE FROM RAW MATERIALS AND MARKETS

If the raw materials and/or finished products are heavy or bulky, the transportation will be costly. Hence, the factory should be located near the sources of raw materials, or the distribution centers so as to economize on the transportation.

If the materials are heavy or bulky, while the products are lighter, the plant should be located near the sources of the materials, although far from the market. Pulp and paper factories, for instance, should be located near the sources of the major raw materials because the material (wood) is roughly twice heavier than the resulting product (paper). In like manner, a sugar mill factory and a fish cannery, should be near the sources of the major materials. Factory processing perishable agricultural products should be near the plantation.

If the major raw materials are imported, the factory should be near a port of entry and near the market centers. This holds true for motor vehicle assembly plants and pharmaceutical packaging firms, which abound in the Greater Manila Area.

2. TRANSPORTATION AND OTHER FACILITIES

If the raw materials and/or products are heavy, the available transportation facilities in the proposed location should be carefully examined. For instance, if the proponents of a cement project have good limestone deposits in two locations—near Cebu City and another near Bacolod City, the plant should be situated in Cebu because it is a shipping center. From Cebu, the cement can be easily shipped to the other Visayan provinces, Southern Luzon, and Northern Mindanao.

If a big project has to use water transportation, either for its raw materials or finished products, it should be near an existing port, a good harbor wherein a pier can be constructed, or along a navigable river. For a fish cannery, a waterfront location is preferable, particularly one whose water depth alongside the dock can accommodate fishing boats, cannery tenders, and lighters at any tide. This facilitates the prompt landing of the catch.

A project which has to use a highway should be along one. If no lot is available along the highway, the project should be along a connecting road, or it should obtain a right of way.

If the railroad has to be used, the plant should be near an existing track. Otherwise, the required right of way and railroad siding will be costly.

As much as possible, a manufacturing project should not be located in a remote area. Otherwise, the project would have to set up a school, a hospital, a general store, a hotel, and other service facilities.

3. LABOR

When a factory is labor-intensive, such as a cigaret manufacturer, it should be near the population centers which can supply most of the labor requirements.

When a factory requires specialized labor, as for footwear manufacture, it has to be in an area where that particular skill is available—as Marikina, Rizal. Otherwise, the cost of training, resettlement and housing, and transportation for the employees may be prohibitive.

Labor is further discussed in Chapter IV of Volume 1.

4. POWER

If a plant uses a lot of electricity, like a plant using the electrolytic process in the manufacture of caustic soda, alumina, or copper, it should be in a place with cheap electricity.

If a plant is in Central Luzon, it may purchase its power either from the National Power Corporation or the Meralco. This will depend on whether or not the site is within the Meralco-franchised area. The rates charged by these two corporations are as follows:

		Monthly charge*	
Demand load	Monthly Consumption	NPC**	Meralco
100 KW	20,000 KWH	₱ 2,200	₱ 6,060
100 KW	60,000 KWH	4,350	14,960
10,000 KW	2,000,000 KWH	202,000	606,000
10,000 KW	6,000,000 KWH	467,000	1,496,000

* Total of demand and energy charges
** Luzon Grid

Since the NPC rates are normally lower than the rates of the franchise holders, the project proponents should carefully verify if the proposed site is within a franchised area.

Electric power is further discussed in Part G of this chapter.

If a plant uses a great deal of bunker fuel oil, it may be located:

1. Near an oil refinery
2. Near a regional depot of an oil company; or
3. Along the sea or a navigable river, so that the oil can be transported bv water.

5. WATER

In some chemical plants, such as pulp mills, the water consumption is large. These types of plants should be near natural water sources such as lakes or rivers. An investigation should be made to find out (1) the year-round availability of water from the source, and (2) the physical, chemical, and bacterial characteristics of the water.Water characteristics may affect to a great extent the quality of certain products, such as beverages or ceramics.

If open natural water sources do not exist, then water may be taken from underground sources. In this case, the water-bearing strata should be present near the surface, so that wells need not be sunk at relatively deep levels.

6. WASTE DISPOSAL

If the plant produces obnoxious wastes in large quantities, it should be located near:

a. Bodies of water where the waste may be discharged; or
b. Adequate public sewer system.

This is specially true if the waste cannot be disposed through other means, as seepage through the ground, neutralization, conversion to by-products or drying.

For a fish cannery, the location should have a good sweep of the tide which will carry far out to the sea any vessel oil and waste which would otherwise pile up and decay in the plant vicinity.

The waste disposal methods are further discussed in Part G of this chapter.

7. TAXES

Projects locating in certain areas may avail of specific tax incentives. For instance, *export producers* registered with the *Board of Investments* which locate their factories in areas (1) designated by the Board as necessary for the proper dispersal of industries or (2) which the Board finds deficient in infrastructure, utilities, and other facilities, shall be entitled to the following incentives:

1. Deduction from taxable income of an amount equivalent to double its direct labor cost in applying the reduced income tax formula of the sum of the direct labor cost and local raw materials as allowed other export producers; and
2. Deduction from taxes payable to the National Government of an amount equivalent to 100% of the cost and maintenance of necessary infrastructure works undertaken by the export producer.

Firms locating in the *Export Processing Zone* in Bataan are allowed the following privileges:

1. Exemption from customs duties, internal revenue, and local taxes, on all domestic and imported supplies, raw materials, and spare parts;
2. Net operating loss carry-over for the first five years;
3. Accelerated depreciation;
4. Exemption from export tax; and
5. Exemption from local taxes, fees, and licenses except real estate taxes.

8. LAND

The lot should not only be available, but should also be cheap and have favorable topography and weight-bearing capacity.

Availability. The area of the available lot should be adequate not only for the immediate requirements but also for a possible expansion program in the future.

A common mistake among Filipino entrepreneurs is to locate a project in a lot already owned by them. This is done although the basic factors discussed above are not favorable.

Cost. In the absence of negotiations with the current lot owners, the basic cost of the lot may be ascertained by estimating the area required and by obtaining the prevailing price per square meter or per hectare in the vicinity of the proposed site. This prevailing price per square meter or per hectare may be based on:

1. Recent sales in the area
2. Offers made by the prospective buyers or sellers
3. Valuation placed on mortgaged properties.

The assessed values for real estate tax purposes should not be used as this is usually much lower than the market value.

In addition to the basic cost of the land, certain costs may have to be incurred such as:

1. The costs of ejecting and/or relocating any squatters;
2. The legal fees in the acquisition of the land.

Certain costs, such as those of clearing or grading the land may be considered part of the cost of the land, or of land improvements.

The cost of the lot may be low if the lot cannot be used for some other purposes. Thus, a company which chose to locate its factory in a predominantly agricultural region in Central Luzon, selected a place where the land is sterile, and hence unprofitable for agricultural purposes.

Topography.* A suitable topography entails the minimum cost of excavating or filling, and drainage. In general, a rolling terrain will entail higher grading costs than a flat one. An extensive filling has two disadvantages. First, the cost of the filing itself would be high. Second, the foundations would be most expensive becasue of the recommended procedure of carrying down foundations to the existing natural ground level, or the level before the filling.

The purpose of the drainage is to collect, transport, and dispose of surface as well as ground water. Hence, the cost of drainage facilities in a rolling terrain would be less than one in a level site. This is dictated by the fact that waterflow is dependent on the gravity or the gradient of the drainage lines. A flat terrain will require more excavation.

From the preceeding discussions, it is apparent that topography has conflicting effects on grading and drainage. It is therefore necessary to consider the grading and drainage costs collectively.

Weight-Bearing Capacity.* The weight-bearing capacity of the soil affects the cost of the foundation or sub-structure. A site with a low weight-bearing capacity requires piles.

In order to determine the weight-bearing capacity of alternative sites, soil exploration surveys should be conducted.

The importance of an adequate foundation cannot be overemphasized. Several local plants have actually encountered difficulties when their structures sank due to the vibrations caused by their heavy moving machinery.

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* Prepared with the help of DCCD Engineering Corporation staff.

D. Layout

Both the ground and the building layouts should be thoroughly planned. The ground layout refers to the arrangements of the buildings, structures and other constructions, and improvements. The building layout pertains to the utilization plan of the building area, and includes the proposed location of the installed machinery equipment.

1. GROUND LAYOUT

In designing the ground layout, the following items should be arranged in such a way so as to provide for a smooth flow of the materials and services:

1. Outdoor machinery and equipment
2. Buildings for factory, office, and storage
3. Pier
4. Roads
5. Parking space
6. Railroad sidings.

The design should strive for the most economically and technically feasible flow of raw materials, goods in process, finished goods, water, power, steam, and industrial wastes within the plant, and systematic tie-in of the plant's internal transportation and service systems with the external facilities. The smooth flow of goods minimizes the number of required material-handling equipment. This is quite important in factories handling heavy materials like pulp mills.

2. BUILDING LAYOUT

In designing the building layout, the following should be studied:

1. Indoor machinery and equipment;
2. Work areas;
3 Passageways;
4. Ventilation and lighting.

Like the ground layout, the building layout should provide for a smooth flow of materials, goods, and utilities. The purpose of this is not only to save on time, but also to reduce the rate of breakage for fragile products, such as glass and bottled items.

Sufficient access should be given to the various units of machinery for the convenience and safety of the workers during the regular operation and maintenance work.

The possibility of expansion should be borne in mind in designing the original layout. In one local factory, the original machinery had to be relocated when a new unit was acquired.

E. Structures*

In some business projects, such as telephone and electric power companies, the cost of buildings and other structures constitutes a minor item of the total investment. In others, such as office and apartment buildings, the cost constitutes the major investment. In either case, the design, the materials of construction, and the construction schemes to be adopted should be properly studied. These factors affect the initial investment, the cost of operations such as maintenance and insurance, and the adaptability to expansion programs.

Structures are composed of two parts: the super-structure (above the ground) and the sub-structure (the foundations below ground). For the sub-structure, the critical consideration is the weight-bearing capacity of the soil as discussed in Part C of this chapter.

1. DESIGN

Design means the working out of the stress-resisting system of the structure. Some designs are:

1. Stretched skin or membrane structures such as tents and prestressed thin shells;
2. Cellular structures;
3. Pre-stressed concrete;
4. Trussed structures;
5. Space frames;
6. Composite structures.

The ways in which the design may affect the cost is illustrated in a comparative study of two types of storage structures: (1) the cylindrical, or vertically-closed-structures, such as silo, which is commonly used for granular materials and liquids, and (2) the conical or tent-shaped structure. In the conical structure, the shape of the covering tent or shell is patterned after the conical shape which the solid materials naturally assume when placed in piles.

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* Items 1 to 4 of this part were prepared with the help of the DCCD Engineering Corporation staff.

In the silo type, the structure should be strong enough to resist the outward lateral pressure exerted by the stored materials. Hence, the construction cost is comparatively high.

On the other hand, in the case of the conical structure, the concept is to let the materials themselves resist the lateral stress exerted by the other materials. Hence, the functions of the enveloping structural tent or shell are: (1) to resist the lateral stress coming from the wind; and (2) to protect the materials from the elements. It is for this reason that the construction cost of the conical structure is low. The structure, however, has two disadvantages: it occupies a bigger land area, and it needs special material storing and discharging equipment.

2. CONSTRUCTION MATERIALS

The advisability of using alternative materials should be thoroughly studied. The basic factors to be considered are: materials cost, ease in construction, maintenance, insurance, and availability in the project site. The application of these factors is illustrated below in the choice between structural steel and concrete.

In general, structural steel is costlier than reinforced concrete. In special cases, however, as in long-span trusses, floor girders, and foundation piles for multi-storey buildings, steel may prove to be more economical than concrete.

Structural steel may be more advantageous than concrete because of faster erection and fewer interruptions during the rainy season. The use of steel, therefore, shortens the construction period.

It should be noted, however, that in general, steel entails more maintenance work due to corrosion. Furthermore, it presents a greater insurance risk because, although it is not combustible, steel frames and members are distorted by the heat from fires.

If pre-stressed concrete is used, it may be advisable to establish the pre-stressing facilities at the project site in order to avoid the prohibitive costs of hauling the material. This is particularly true if the project site is far from the existing pre-stressing plants, and if the project requires a considerable quantity of long-span and heavy pre-stressed concrete members.

3. CONSTRUCTION SCHEME

The particular construction scheme to be adopted should be studied. Presented below are two possible methods—the pre-stressed concrete construction method, and the lift-slab or tilt-up scheme.

Pre-stressed Concrete Construction. The structural members are plant-processed so that closer quality control of material and work is possible. Because of this, and because of the special stress-resistance scheme, smaller sections are required, which is an advantage, since there is a reduction of the weight (or dead load) penalty.

Lift-slab or Tilt-up Concrete Construction. This method is characterized by pouring concrete slabs or walls on the ground floor level layer-wise, so that the bottom units serve as forms for the upper ones. After curing, erection is accomplished by sets of hydraulic jacks in the lift-slab method, and by cranes in the tilt-up method. The economic advantage here stems from the elimination of extensive formwork which, under the conventional procedure for concrete pouring in-place, considerably increases the construction cost.

4. PROVISION FOR FUTURE EXPANSION

The design and construction of structures should consider future expansion. Basically, the particular problem may be a choice between vertical or lateral expansion. If expenses corresponding to the interference of existing operations are taken into account, the general rule favors the lateral rather than the vertical scheme. Lateral expansion refers to the addition of units independent from existing ones so that future adaption costs would be minimal.

In the case of vertical expansion, interference with existing operations and modifications of the existing structure is exemplified by changing the existing roofing system into the floor system of the added structure. It is apparent that these modifications are more involved. Hence, they are time consuming and more expensive.

5. COST

In the preliminary estimates, the cost of the structure may be roughly estimated by determining the building area required and the average cost per square meter. The cost per square meter will depend, among other things, on the: building; type of construction material; construction scheme; number of floors; and foundation required. The cost per square meter may be obtained from architects, civil engineers, or building contractors. Central air-conditioning systems and elevators form part of the building cost.

If detailed building specifications and bill of materials have already been prepared, the building cost can be based on these.

F. Raw Materials

The study of raw materials covers the:

1. Ascertainment of the quality or specifications;
2. Determination of the annual quantity required;
3. Selection of the sources; and
4. Selection of the method of transportation.

1. QUALITY

The exact specifications of the raw materials should be studied. These will cover both the physical and chemical properties of the materials. In a ceramics project, for instance, it will not be adequate to specify the type of clay required—whether koalinite or beidellite. A chemical analysis has to be made, in order to ascertain the carbon, silica, alumina, iron oxide, lime, magnesia, titanium oxide, soda, potash, and sulfur contents. The distribution of the carbon content has to be ascertained. The effect of calcination on the carbonaceous matter and ferrous iron has to be studied. Furthermore, the fusibility, plasticity, melting point, and shrinkage characteristics have to be known.

There should be some degree of assurance that the material as specified is reliable. When there is a factory in the Philippines or abroad which is using the material of the same specifications, the reliability can be easily checked. Otherwise, the materials have to be tested in laboratories. Before the Paper Industries Corporation of the Philippines (PICOP) was established, the raw materials (Philippine woods) were tested not only in the laboratories, but were actually converted to newsprint. The newsprint was subsequently used by a U.S. newspaper company.

The studies and tests should be made on as many alternative materials as possible so as to determine the one which is most economical, which will give the best results, and which is most readily available.

2. QUANTITY

The annual production schedule of a plant may be estimated on the basis of market forecasts, proposed plant capacity, and desired levels of finished goods inventories.

The annual raw material requirements in turn will be based on the annual production schedule, the expected raw materials requirement per unit of finished product, processing losses, and expected raw materials and work in process inventories. The determination of the material requirements may be facilitated by the use of a materials balance as shown in Exhibit 2.

3. SOURCES

The raw material needed may be:

1. Imported
2. Locally available—
    a. Manufactured
    b. Natural resource.

The importation of raw meterials is often subject to vicissitudes. The foreign exchange rate or the tariff rate may be increased. Pier strikes may be declared in the Philippines or in some foreign ports. The significance of pier strikes may be brought out by the fact that the operations of several manufacturing firms had to be suspended in 1963 due to the 5-month Manila pier strike. Because of these factors, efforts should be made to obtain the materials locally.

If only one manufacturer produces the material locally, it may increase the price at any time. In July 1966, for instance, the lone local producer of amber bottles increased the price by 7%. The pharmaceutical firms could not easily turn to importations as the tariff duty is 40%. It may be necessary, therefore, to secure a long-term contract with the lone local producer.

In certain instances, some of the materials have to be manufactured by the project itself because it is not economical to transport them over long distance. Hence, a fish cannery should have its own can manufacturing plant. Or it may purchase the can ends and bodies and attach them at the cannery. This arrangement will reduce the cost of transportation and the initial plant investment.

If the raw materials are to be mined, as in the ceramics and cement industries, the extent and quality of the deposits should be estimated by qualified geologists or mining engineers. Furthermore, the covering reports of the Bureau of Mines should be referred to. Steps should be taken to have the mining claims properly registered.

If the materials are freely available such as forest products or fish, investigations should be conducted to assure the project of a continuous supply. In a cannery project, the species to be canned should be sufficient in supply within the proposed fishing area.

4. TRANSPORTATION

If the materials are heavy or bulky, particular emphasis should be placed on the transportation problem. The materials may be transported by railroad, barge, or truck. The economics and realiability of the different means should be evaluated. If the transportation is by barge or truck, the project may hire a contractor, or obtain its own units.

5. COST

In order to decide on the raw materials to be used and source to be tapped, the unit cost of different materials from different sources should be compared.

For imported materials, the procedure for estimating the landed cost is similar to that of the machinery. The only difference is that a machinery is subject to a compensating tax, whereas raw materials are subject instead to advance sales tax. Although the tax rates are the same—7% for necessities, the compensating tax is based on 100% of the CIF Manila, customs duties, charges of local banks, wharfage, arrastre, and other charges, whereas the 7% advance sales tax for necessities is based on 125%. The 125% includes the 25% mark-up. The compensating and advance sales tax may be compared as follows:

	Machinery	Raw Materials
CIF Manila	₱ 900	₱ 900
Customs duties - 10%	90	90
Charges of local banks, wharfage, etc.	10	10

	Machinery	Raw Materials
Total	₱1,000	₱1,000
25% mark-up		250
Tax base	₱1,000	₱1,250
Tax rate	7%	7%
Compensating tax	₱ 70	
Advance sales tax		₱ 88

The custom duties on materials to be used in the manufacture of goods for export may be refunded later on. However, although this duty drawback is provided for in the law, there are many firms which encounter difficulties in obtaining the refund.

The custom duties and compensating and advance sales taxes are discussed further in Chapter II.

G. Utilities

The plant utilities cover the power, water, and steam requirements, and the waste disposal system.

1. POWER

The problem of supplying the power requirements boils down to two options: purchasing from a local company or generating within the plant. This decision will be influenced, among others, by the power requirements of the plant, and availability and cost of outside power. Normally, the immediate requirements will be less than the installed capacity in order to allow for future expansion.

In areas served directly by the National Power Corporation, purchasing power seems to be the only alternative unless the plant power requirement is extremely heavy, say over 15,000 KW. In areas served by the Manila Electric Company, purchasing power is usually more economical unless the plant power requirement exceeds 5,000 KW, in which case it would be wise to consider power generation within the plant. In rural areas served by small power companies, generating power within the plant may be advisable if the plant requirement is above 1,000 KW.

Purchased Power—Power Distribution System.* If the power is going to be purchased, the type of the distribution system has to be determined. The function of the distribution system is to receive the incoming power from the power company and distribute it to the outlying motor control centers or load centers and thence to the different motors and electrical equipment.

A very important element of the power distribution system is the power sub-station. Most power companies normally supply this up to a certain capacity which varies from one power company to another. For instance, the MERALCO supplies the power sub-station for plants with up to 1,000 KVA power requirement. This represents substantial savings in the initial investment on the part of the industrial plant.

The shortcoming of this arrangement is that the power company dictates the service voltage which is also the distribution voltage within the plant. There are cases where the most economical distribution voltage is not necessarily the same as the service voltage of the power company. In such cases the initial savings that can be realized if the power substation is supplied by the power company may be offset by an expensive power distribution system. If the plant acquire its own sub-station, it is free to choose its distribution voltage which will result in a cheaper distribution system. Careful studies must therefore be made to determine which is more economical: (1) to have the power sub-station supplied by the power company or (2) have it supplied by the plant itself.

Purchased Power—Basis of Cost. In the case of electricity purchased from the National Power Corporation or MERALCO, the cost will be computed on two bases: the demand charge, and the energy charge. The demand charge is based on the kilowatts (KW), which is about 75% of the normal operating horsepower. The energy charge is based on the kilowatt hours (KWH) per year or per month. The KWH per year may be estimated as follows:

Horse power - operating	-	1,200
KW - 75% of HP	-	900
Capacity	-	60%
Days in operation per year	-	300
Hours in operation per day	-	10
KWH per year - 900 x 60% x 300 x 10	-	1,620,000

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* Prepared with the help of DCCD Engineering Corporation staff.

The National Power Corporation System. The National Power Corporation serves almost the whole of Luzon, Iligan City, and other areas.

The rates charged by NPC are:

	Luzon Grid and Bicol Sub-Grid	Agus Grid (Mindanao)	All others (isolated systems)*
Demand charge per month			
First 1,000 KW	₱5.00	₱2.00	₱10.00
Next 9,000 KW	3.00	1.50	10.00
Over 10,000 KW	1.00	1.00	10.00
Energy charge per month per KWH			
First 300 KWH**	₱0.085	₱0.03	₱0.110
Next 150 KWH	.070	.02	.090
Over 450 KWH	.050	.01	.070

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* Power from small plants

** Per KW of billing demand

The MERALCO System. The Meralco serves the following areas:

1. Bulacan — Malolos, Bigaa, Bocaue, Marilao, Polo, Guiguinto, Meycauayan, Obando, Valenzuela and Sta. Maria.
2. Manila and suburbs.
3. The whole of Rizal province, except Montalban, San Mateo, Marikina, Teresa, Morong, Cardona, Baras, Jalajala, and Tanay.
4. Laguna — San Pedro, Biñan, Sta. Rosa, Cabuyao, and Calamba.
5. San Pablo City
6. Lucena City.
7. Cavite — Cavite City, Noveleta, and Kawit.
8. Quezon province — Lucban, Tiaong, Candelaria, Magdalena, and Luisiana.

The rates charged by Meralco are:

Demand charge per month		
For each kilowatt of billing demand	-	₱12.60/KW
Energy charge per month		
First 200 KWH*	-	₱0.24/KWH
Next 200 KWH	-	.23
Next 100 KWH	-	.22
Next 100 KWH	-	.21
Over 600 KWH	-	.20

* Per KW of billing demand

The above rates are subject to adjustment arising from

1. Bulk sales
2. Currency exchange rate changes
3. Fuel cost changes.

2. WATER*

Water varies in hardness, turbidity, color, and chemical and bacteriological contents. Manufacturing firms use water for the manufacturing process, steam generation, cooling, drinking, general cleaning, and fire-fighting. The type of water required by a project depends on the specific usage. The water for boilers, for instance, should be soft. Hard water contains calcium and magnesium salts which cause the formation of scales in boiler tubes. Because the readily available water may not be the same as the type of water required by the plant, the water has to be treated first. Various water treatment methods have been devised. If the treatment cost is high, the project may have to resort to a dual water supply system. That is the treated water will be used for certain purposes only.

If the water supply is not continuous throughout the year, the project has to construct storage facilities which may be in the form of ground tanks, elevated water reservoirs, cylindrical pressure tanks, or even dams for large projects.

Source. The possible water sources are:

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* Portions of this part were prepared with the help of the DCCD Engineering Corporation staff.

1. Metropolitan Water Works and Sewerage System
2. Deep wells
3. Natural bodies
4. Rain
5. Local waterworks systems.

Metropolitan Waterworks and Sewerage System. The System covers the Greater Manila Area consisting of Manila, Quezon City, Pasay City, Caloocan City, Cavite City, Antipolo, Las Piñas. Cainta, Makati, Malabon, Mandaluyong, Marikina, Montalban, Navotas, Parañaque, Pasig, Pateros, San Juan, San Mateo, Taguig, Taytay, Valenzuela (Bulacan), Bacoor (Cavite), Imus, Kawit, Noveleta, and Rosario (also Cavite).

The rate charged to commercial establishments is ₱0.60 per cubic meter.

If consumption is not large and Metropolitan Waterworks and Sewerage System water mains are close to the plant, a connection to the system may prove to be most economical. This, despite the fact that (1) the System penalizes rather than encourages larger water users, and (2) storage and pumping will be necessary because of the inadequancy of supply and pressure at certain times of the day during certain months of the year.

Deep Wells. These are used by projects within the Greater Manila Area which are remote from the Metropolitan Waterworks and Sewerage System mains and from surface water sources. The cost of an average-sized well and pump now runs to about ₱200,000. Because of the inadequacy of public water systems, deep wells have become popular. This has resulted in an alarmingly lowering of the ground water table within Manila and suburbs. Many wells are now yielding brackish waters. This is the effect of the intrusion of sea water into the water bearing strata due to over-pumping.

Natural Water Bodies. The Pasig and Marikina rivers are good examples of natural water bodies which may be tapped for water. However, locating a plant along these rivers has certain disadvantages. There is the destructiveness of flash floods so that expensive shore protection and filling up of sites have become a must. Furthermore, the river water is silted up.

Rain. The fourth possible source is rain water. This method is not easily adaptable in Manila and environs because of the long pronounced dry season which would require unnecessarily large roof areas and reservoirs. There are places in the Philippines, however, like Davao City, where this may be the most practical source for industries requiring mineral-free water in small quantities.

3. STEAM

The process steam requirement varies from industry to industry. It is quite high in the manufacture of viscose rayon, benzene hexachloride, pulp, and processed food.

The steam requirements of a project in terms of the following should be determined:

1. Maximum pressure
2. Maximum temperature
3. Maximum steam demand in pounds per hour at specified pressure and temperature
4. Average steam consumption in pounds per hour.

After the above data have been obtained, the types and number of boilers to be used, as well as the plan for the steam distribution facilities can be specified.

Although bunker fuel oil is commonly used for boilers in the Philippines, other fuels which are abundant in the locality of the project should be studied for possible use. The water to be used by the boiler should be properly checked specially if the pressure is high.

The steam generation units may, in some cases, be also the source of electric power.

4. INDUSTRIAL WASTE

Factories, specially those with chemical processes, produce wastes. They may be in the form of gas, liquid, or solid. They are usually noxious to some forms of life. Their exact chemical and physical properties, and the expected periodic quantity should be ascertained in order that proper waste collection-treatment-disposal methods can be designed.

Waste Disposal Methods. The popular methods available are:

1. Seepage through the ground
2. Discharge to water bodies
3. Neutralization
4. Conversion to by-products
5. Drying or incineration

6. Discharge into a public sewer system.

In the selection of the method, one has to consider the effectiveness and reliability on one hand, and the cost on the other. Irrespective of the method of disposal to be followed, clearance have to be obtained from the proper authorities such as the National Pollution Control Commission and municipal officials.

Seepage. If the liquid waste is allowed to seep through the ground, steps should be taken to assure that the ground is porous enough to absorb the effluent. Furthermore, the underground flow of the waste should be predicted to be sure that the waste will not endanger the health of those living in the neighborhood. For instance, the waste might be picked up by a deep-well pump.

Discharge to Bodies of Water. If the waste is going to be discharged to a body of water, the waste may:

1. Impart color and turbidity on the receiving water;
2. Add bacteria and other pollutants or poisonous substance to the water.
3. Deplete the dissolved oxygen in the water; and
4. Deposit floating and settable solids.

Hence, in the discharge of waste in water bodies, the capability of the receiving water to dillute the polluting loads to tolerable and acceptable levels should be considered. Otherwise, plant and animal life may be endangered. For instance, it had been noticed that the wastes discharged by a local pulp plant using the sulphate process into a water body had a toxic effect on the fish. For this matter, the fishermen in the area had to complain about the practice.

Neutralization. Some plants use chemicals which neutralize the effect of some wastes. The wastes of some industries, however, are varied, such that if they are kept for a day or for a few hours in waste holding tanks, they automatically neutralize each other.

Other methods. Some types of wastes may be treated further and sold as by-products. For instance, the waste liquors of pulp plants using the sulfite process may be converted into alcohol through fermentation.

The cheapest solution would be to discharge the wastes to a public sewer system, if one is available within a reasonable distance. This will be preferable specially if little or no pre-treatment is required.

Exhibit 1

PROCESS FLOW SHEET FOR CEMENT MANUFACTURE (DRY PROCESS)

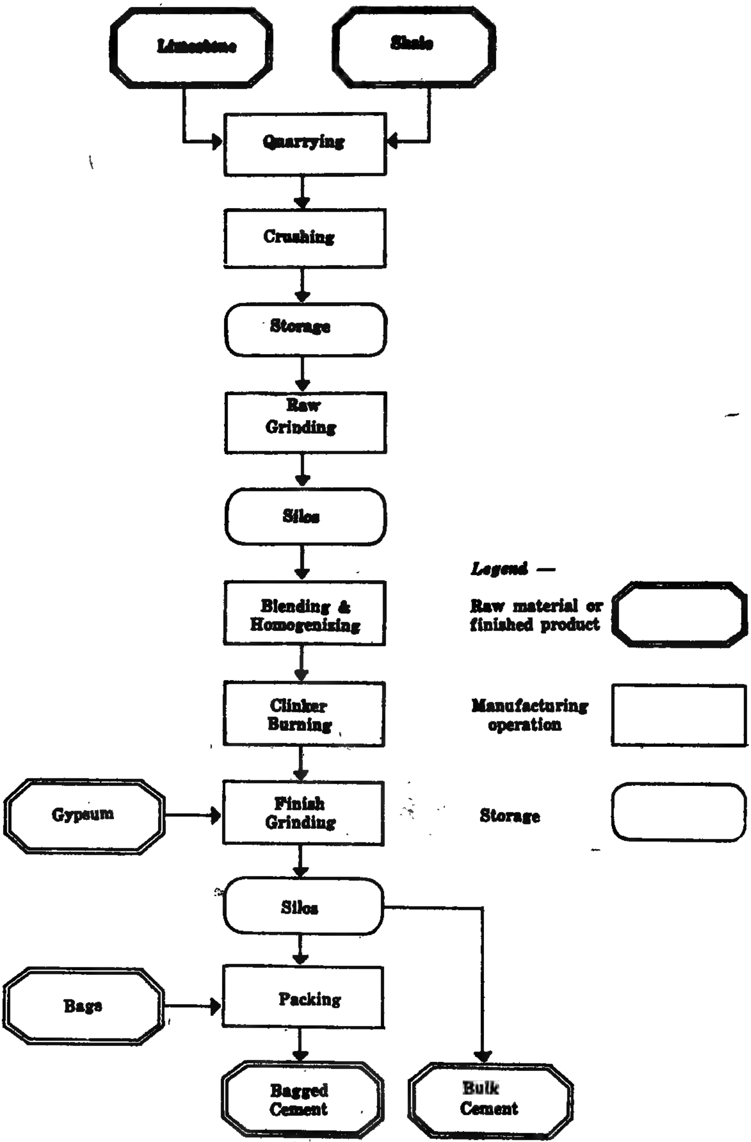
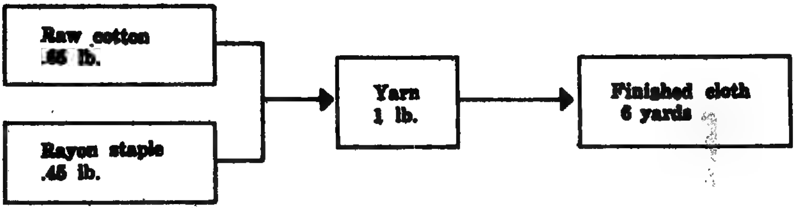


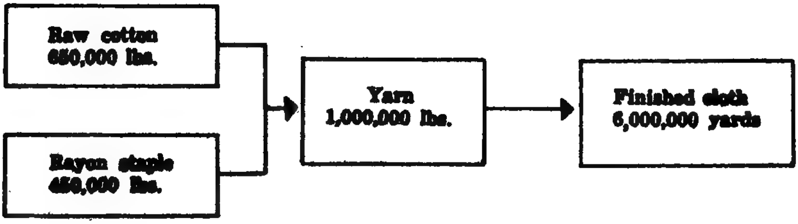
Exhibit 2

MATERIALS BALANCE FOR TEXTILE MANUFACTURE

PER SIX (6) YARDS OF FINISHED CLOTH—



ANNUAL BASIS (AT ONE (1) SHIFT A DAY, 300 DAYS A YEAR)



Chapter II

Taxation Study

THE OBJECTIVES OF THE TAXATION STUDY ARE TO:

1. Pinpoint the tax provisions applicable to the project;
2. Explore the tax exemptions which may be availed by the project; and
3. Offer alternative business designs which will minimize the tax liabilities of the project and its owners.

The attainment of the first objective will help insure the integrity of the profitability estimates. The availment of tax exemption privileges and the proper packaging or designing of the project will increase its feasibility.

A. Tax Provisions

A business project has to pay any or all of the following taxes:

1. *Import taxes*
    a. Custom duties; and
    b. Specific tax, compensating tax, or advance sales tax.

2. *Business taxes*
   a. Manufacturing
      1) Manufacturers' sales tax - 5%, 7%, 10%, 15%, 35%, 40%, 70%, 100%, 125%, 150%, 175%, and 200% of sales (Sec. 184-186-B of the National Internal Revenue Code)
      2) Millers' tax—(sugar mills, coconut oil mills, etc.)—2% of sales (Sec. 189)
      3) Specific tax (distilled spirits, cigarets, etc.) (Title IV)
   b. Mining and logging
      1) Mining ad valorem taxes—2% and 1-1/2% of sales (Sec. 243)
      2) Forest charges (Sec. 264)
   c. Service
      1) Contractors' tax - 3% (Sec. 191)
      2) Common carriers' tax - 2% (Sec. 192)
      3) Brokers' tax - 6% (Sec. 195)
      4) Tax on banks and other financial institutions - 5% (Sec. 249)
      5) Tax on insurance companies - 3% (Sec. 255)
      6) Franchise tax - 5% (Sec. 259)
      7) Caterers' tax - 3% on food and 7% on drinks (Sec. 191-A)
      8) Amusement tax - (Sec. 260)
3. *Real Estate Tax*
4. *Income tax*

Except for the customs duties and real estate tax, which are covered respectively by the Tariff and Customs Code and the municipal ordinances, all of the above taxes are imposed by the National Internal Revenue Code.

Not included in the above listing are other taxes such as firearms license fee, and fees for the sealing of weights and measures. It is believed, however, that those excluded in the listing will not be of significance in the majority of business projects.

When a business project imports, it has to pay import taxes, which may be in the form of: (1) customs duties and compensating tax; (2) duties and advance sales tax; or (3) duties and specific tax; depending on the nature of the article being imported, and the way in which it will be used by the firm.

When a project which is engaged in only one industry is in normal operations, it has to pay a business tax, which is normally one of those listed down under item 2 above. Thus, if it assembles cars, it pays only manufacturers' tax. The other taxes in item 2, such as millers' tax, specific tax, mining ad valorem taxes, and forest charges, are not applicable.

Irrespective of the nature of operations of a project and of the way in which it is organized, it has to pay real estate tax if it has assessed properties.

Certain form of business organizations pay income tax.

1. IMPORT TAXES

The import taxes for machinery and equipment to be used in the business operations and not to be sold are in the form of customs or tariff duties and compensating tax. For most types of raw materials or finished goods, the import taxes consist of customs duties and advance sales taxes. For some types of raw materials or finished goods, such as coal and coke, the import taxes are made up of customs duties and specific tax.

Thus, for any particular importation, only two types of import taxes are payable. It should be noted, however, that some articles or business entities are exempt from one or more of the import taxes.

The relationships of the import taxes to the other components of the landed cost of imported articles are shown below:

	Machinery or equipment	Raw materials or finished goods
1. Cost, insurance, and freight (CIF), Manila, in pesos		
2. Customs duties (a)		
a. Ad valorem (based on item 1)		
b. Specific	(x)	
3. Charges of local banks, wharfage, arrastre, brokerage, and other charges		
4. Storage fee in bonded warehouse		

	Machinery or equipment	Raw materials or finished goods
5. Landed cost before other taxes		
6. Compensating tax (based on item 5) (b)		(x)
7. Advance sales tax (based on item 5) (c)	(x)	
8. Specific taxes (d)	(x)	
9. Transportation to plant site		
10. Total cost, ex-plant site		

(a) The duties may be ad valorem, specific or both.
(b) Imposed only on machinery and equipment to be used in the project.
(c) Imposed only on raw materials or finished goods which are not subject to the specific taxes.
(d) Imposed only on articles covered in Title IV of the National Internal Revenue Code.
(x) Not applicable

Customs Duties. The customs duties are either:

1. Ad valorem, or expressed as a percentage of the CIF value of the article, such as 15% for bakery flour;
2. Specific or fixed amount of duty per unit of measure, such as ₱0.75 per kilo gross weight of raw wheat; or
3. Both ad valorem and specific.

The rates of ad valorem duties range from zero (free), as for pig iron, up to 200% for perfumery and cosmetics.

In general, the duties on raw materials, semi-processed goods, and finished products are low for the materials, higher for the semi-processed goods, and highest for the finished products. Thus, in the meat canning industry, the rate of live cattle is ₱20 per head, or roughly 4% of the CIF-Manila value, while the rate on corned beef is 8%. However, there are exemptions to this general rule. For instance, in the cotton textile industry, the cotton yarn is processed into grey cloth. However, the rate on the yarn was 70%, while that on the grey cloth was lower, 50%. This tariff structure in the cotton textile manufacturing industry had an adverse effect on some sectors of the industry before the passage of the Textile Industry Act. A spinning mill company producing the yarn with a 70% tariff protection would be discouraged from integrating forward to set up a weaving mill producing grey cloth with only 50% tariff protection.

The rate for most items of machinery and mechanical appliances for factory use is 10%.

In general, the rate depends on the need for the item (necessity, semi-luxury, or luxury) and on the local availability.

The rates for specific items may be obtained from the Tariff and Customs Code (Republic Act 1937 as amended).

Compensating Tax. The compensating tax, as provided for in Section 190 of the National Internal Revenue Code, is imposed on the importations of machinery and other equipment to be used and not to be sold by a project. The tax is based on the CIF-Manila, plus customs duties; charges of local banks; wharfage; arrastre, brokerage; and other charges. The rate for most items of machinery and equipment is 7%.

Advance Sales Tax. The advance sales tax, as provided for in Section 183 of the National Internal Revenue Code, is imposed on the importation of raw materials, semi-processed goods, and finished products, which are to form part of commodities for sale, and which are not subject to the specific tax. The tax is based on the CIF-Manila, plus customs duties and other charges plus certain mark-ups. The rates of the mark-ups are as follows:

Luxuries (as toilet preparations and jewelry)	100%
Semi-luxuries (as washing machines and electric fans)	50%
Necessities (most items of raw materials for use of factories)	25%

The rates of the advance sales tax are the same as those for the manufacturers' sales tax which are given in a succeeding section.

The advance sales tax for a necessity may be computed as:

CIF-Manila, plus customs duties and other charges	₱1,000
Mark-up - 25%	250
Basis	₱1,250
Advance sales tax - 7% of ₱1,250	₱ 87.50

Specific Tax. Specific internal revenue taxes are imposed on the (1) importation and (2) local manufacture for domestic sale of: distilled spirits, wines, fermented liquors, manufactured products of tobacco, matches, firecrackers, manufactured oils and other fuels (kerosene, gasoline, bunker fuel oil, etc.), coal and coke, cinematographic films, and playing cards.

The rates of specific taxes on the importation of any of the above products are the same as those for the local manufacture.

2. BUSINESS TAXES

Business taxes are the percentage and specific taxes which are imposed on the manufacture, sales, rendering of service, or collection of income of various types of business projects. A project which limits itself to only one basic operation will normally pay only one type of business tax. Thus, in the field of manufacturing, a soft drinks project is subject to the 7% manufacturers' tax only; a sugar central, to the millers' tax of 2% and a cigaret firm, to the specific tax. A mining project which is not covered by a lease is subject to 2% or 1-1/2% mining ad valorem tax.

In some cases, however, a project may have to pay more than one type of business tax. Thus, a mining project which is not covered by a lease and which obtains some of its timber requirements directly from a public forest will be subject to both the mining ad valorem of 2% or 1-1/2%, and the forest charges.

Manufacturers' Sales Tax. The manufacturers' sales tax, as provided for in Sections 184, 185, 185-A, 185-B, 186 and 186B of the National Internal Revenue Code, is imposed on the domestic sales of manufactured articles by the manufacturer. Hence, export sales are not subject to this tax. The tax is based on the selling price of the goods. The rates are:

Automobiles (Sec. 184-A of NIRC)	10%-200%
Luxuries (as toilet preparations and jewelry) (Sec. 184)	70%
Semi-luxuries (as washing machines, electric fans, sporting goods) (See. 185)	40%
Refrigerators, air conditioners, radios, TV's, etc. (Sec. 185-A and B)	7%-40%
Necessities (Sec. 186)	7%
Processed goods (Sec. 186-B)	5%

For refrigerators and airconditioners, the rate may be 40%, 15% or 7%; and for phonographs, radios, television sets, and similar equipment, the rate may be 40% or 7%; depending on the portion of selected components and parts which are made by the manufacturer itself.

Normally, if the manufactured articles are made out of raw materials wherein the corresponding advance sales tax (in case of imported materials) or manufacturers' tax (in case of locally produced materials) have been paid, the value of such materials may be deducted from the selling price of the manufactured articles for purposes of computing the manufacturers' tax. It is required, however, that both manufactured articles and raw materials fall into the same classification—luxuries, semi-luxuries, or necessities.

The manufacturer's sales tax for a necessity may be computed as follows:

Selling price of manufactured article		₱10,000
Value of tax-paid raw materials*:		
Imported -		
CIF Manila, plus customs duties and other charges	₱1,000	
Mark-up - 25%	250	
Taxable value of imported materials	1,250	
Locally purchased	2,750	
Total deductions for tax-paid materials		4,000
Subject to 7% tax		₱6,000
Sales Tax - 7% of ₱6,000		₱ 420

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* Assumed to be considered also as a necessity item, and hence subject to the 7% advance sales tax, or 7% manufacturer's sales tax.

Specific Tax. Savings in specific taxes may be made through modifications in the product specifications. Thus, if a project intends to manufacture still wines with 15% alcohol, the tax will be ₱2 per liter. However, if the alcohol content is reduced to 14%, a tax savings of ₱1 per liter may be effected.

Miller's Tax. The millers' tax is imposed on rope, factories, sugar centrals, coconut oil mills, dessicated coconut factories, and cassava mills.

The tax is 2% of the sales.

Other Business Taxes. Some of the other business taxes are imposed on:

1. *Mining firms* - mining tax of 1-1/2% for gold and 2% for others, based on the value of minerals extracted from mineral lands not covered by lease contract (Sec. 243).
2. *Logging operations* - forest charges on timber cut in public forests—from ₱0.60 to ₱3.50 per cubic meter, depending on the type of the timber (Sec. 264).
3. *Contractors* - construction works contractors, dockyards, steam laundries, broadcasting and wireless stations, warehouses, hotels, and other service organizations—contractors tax of 3% of gross receipts (Sec. 191).
4. *Bars* - 7% of gross receipts (Sec. 191-A).
5. *Common carriers* - 2% of the gross receipts (Sec. 192).
6. *Brokers* - stock, real estate, commercial customs, and immigration brokers—6% of gross receipts (Sec. 195).
7. *Banks, finance companies,* and other financial intermediaries—5% of gross receipts (Sec. 249 and 249-A)
8. *Insurance companies* - 3% of premiums collected (Sec. 255).
9. *Amusement enterprises* - (Sec. 260):
    a. Theaters - rate to depend on the admission fee; for admission of ₱1.00 or over, the rate is 30%.
    b. Cabarets and night clubs - 10%.
10. *Franchise holders* - 5% of gross receipts or as specified in the special charter, whichever is higher, unless the charter precludes the imposition of a higher tax.

3. REAL ESTATE TAX

The real estate tax is based on the assessed value of the land, land improvements, buildings, and installed machinery. Actually, the assessed values are lower than the market value, or acquisition cost. However, for the sake of estimating the real estate tax in the preparation of financial projections, the assessed value may be assumed to be the same as the estimated cost of acquisition.

The rates of real estate tax for selected cities are: Manila, 1.5%; Baguio City, 1.3%; Quezon City, 1.25%; Davao City, 1.125%; Cavite, Naga, Legaspi, Iloilo, Bacolod and Tacloban, 1%, and Cebu City,

.875%. The rate in most provinces, including Rizal, Bulacan, Pampanga, and Pangasinan is 1%.

R.A. 5447 levies a tax of 1%, in addition to the basic rates given above.

In Manila, installed machinery is subject at once to real estate tax. In the provinces, there is no real estate tax on the machinery for the first five years.

4. INCOME TAXES

The corporate income tax rates are:

For the first ₱100,000	-	25%
In excess of ₱100,000	-	35%

5. OTHER TAXES

In addition to the taxes discussed above, there are many others which may be payable by a project. It should be noted that in most cases, the amounts involved are not significant. Illustrations of these are:

1. Individual residence tax - up to ₱1,000 a year;
2. Corporate residence tax - up to ₱2,000 a year;
3. Firearms license fees;
4. Privilege taxes on business and on occupation;
5. Occupation fee and rentals for mining projects;
6. Fees for the sealing of weights and measures; and
7. Documentary stamp tax which is imposed on certain documents, such as stock certificates, bank checks, promissory notes, insurance policies, and bills of lading.

6. PAYMENT OF TAXES

Import taxes—customs duties, compensating tax, advance sales tax, and specific taxes—are payable before the imported goods may be released from the customs.

Most of the business taxes are payable on a monthly basis—20 days after the end of the month to which they pertain. This includes the following: manufacturers' sales tax, millers' tax, contractors' tax, common carriers' tax, brokers' tax, and the tax on banks. The specific taxes are payable before the removal of the goods from the place of production. The mining ad valorem taxes and the forest charges are payable before the removal of the goods from the locality.

Real estate taxes in the provinces, as provided for by CA 470, are payable in two instalments—May 31 and November 30. The payment of the real estate taxes in chartered cities is fixed by the respective city charters.

The individual income tax may be payable in two instalments—April 15 and July 15 of the succeeding year, if the calendar year is used for accounting purposes. The corporate income tax is payable quarterly during the year to which it accrues.

B. Tax Exemptions

Tax exemptions are provided for mainly by:

1. Investment Incentives Act (R.A. 5186)
2. Export Incentives Act (R. A. 6135)
3. Tourism Industry Incentives Decree (P. D. 535)
4. Foreign Trade Zone Authority Act (R. A. 5490)
5. National Internal Revenue Code.

Applications for the availment of incentives shall be filed with the follwing offices:

1. Board of Investments—for tax exemptions under the Investment Incentives Act, and the Export Incentives Act.
2. Philippine Tourism Authority—for the Tourism Industry Incentives Decree.
3. Foreign Trade Zone Authority—for the Foreign Trade Zone Authority Act.
4. Bureau of Internal Revenue and other offices—for the National Internal Revenue Code.

1. INVESTMENT INCENTIVES ACT (R. A. 5186)

Every year the Board of Investments (BOI) draws up an *investment priorities plan* (IPP). The IPP for 1975-1976 is shown in Exhibit 1.

The IPP lists down the industries for which applications for incentives may be filed for the year. The IPP specifies if an industry is considered as *pioneer* (generally a new product or a new or untried process in the Philippines) or *non-pioneer.*

The BOI also prepares annually the *public utilities priorities plan* (PUPP). The first such plan prepared, which is for 1975-1976, is for:

1. Inter-island shipping and directly related facilities essential to the efficient operation of ships (pioneer/non-pioneer)
2. Electric utilities (non-pioneer).

The tax and other incentives given to the *pioneer and non-pioneer enterprises* under the IPP and PUPP are:

Income tax incentives

1. Deduction of organization and pre-operating expenses for a period not over 10 years
2. Accelerated depreciation
3. Net operating loss carry-over
4. Tax credit for withholding tax on interest
5. Deduction for expansion reinvestment
6. Deduction for labor training expenses
7. Reduced income tax for completing finished export products.

Other tax incentives

1. Tax free capital equipment imports for pioneer projects, and for non-pioneer projects with total assets of less than ₱500,000. For those with over ₱500,000 assets, and less than 20% return on equity (in case of expansion projects), reduction in taxes and deferred payment of taxes due. For those with over 20% return on equity, and/or mere replacement and modernization of facilities, deferred tax payment.
2. Tax credit on local capital equipment purchases
3. Special tax credit for raw materials and supplies for export products.

Non-tax incentives

1. Employment of foreign nationals
2. Anti-dumping protection
3. Protection from government competition.

In addition to the above, *pioneer enterprises* are entitled to the following incentives:

1. Tax exemptions from all taxes under the National Internal Revenue Code except income tax
2. Tariff protection.

Investors in enterprises registered under the Investment Incentives Act are given the following incentives:

Income tax incentives

1. Capital gains tax exemption
2. Tax allowance of investments*
3. Tax exemption on sale of stock dividends.*

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* For Philippine nationals investing in pioneer enterprises

Non-tax incentives

1. Repatriation of investment*
2. Remittance of earnings*
3. Foreign loans*
4. Freedom from expropriation*
5. Requisition of investment*
6. Patents protection.

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* Available to all investors although the enterprise is not registered under the Investment Incentives Act.

2. EXPORT INCENTIVES ACT (R. A. 6135)

This Act gives incentives to companies in the following activites which are registered under the Act, as well as to their investors:

1. Production for export (export producer)
2. Buying locally for export (export trader)
3. Performing certain services abroad (service exporter).

Every year, the BOI draws up an *export priorities plan* (EPP), which contains the products or industries entitled to incentives. The EPP is divided into 2 parts—*List A*, and *List B*.

List A contains a list of export products of existing firms. Firms registered for List A products shall be entitled to all incentives granted under R. A. 6135 except tax exemption on imported capital equipment. However, exceptions to this policy may be made; and on a case to case basis, firms registered under List A may be allowed tax and duty free importation of capital equipment, provided that the following conditions are fulfilled:

1. The applicant firms have already made commercial exportation of their registered exportable products;
2. They are currently utilizing close to one hundred percent of their total existing capacity; and
3. They can prove to the satisfaction of the BOI that the expansion capacity being applied for will be used substantially (at least 50%), if not entirely, for export.

List B would include products of preferred projects which are intrinsically export-oriented, or of such a nature that even if production were to be substantially sold in the domestic market, they would still be desirable to promote. Enterprises registered under List B will be entitled to tax-free importation of machineries only if the project will export at least 50 percent of its total production.

The EPP List B is shown in Exhibit 2.

The EPP is for both export producers and export traders.

The incentives available to *export producers* are:

1. Reduced *income tax* for 5 years after registration
2. Deduction of *labor training* expenses
3. Deduction for *expansion* reinvestment
4. *Tax credit* on sales, compensating, and specifc taxes, and duties on both imported and local raw materials
5. Tax free capital *equipment imports* for pioneer projects, and for non-pioneer projects with total assets of less than ₱500,000. For those with over ₱500,000 assets and less than 20% return on equity (in case of expansion projects), reduction in taxes and deferred payment of taxes due. For those with over 20% return on equity, and/or mere replacement and modernization of facilities, deferred tax payment
6. Tax credit in *local capital equipment* purchases
7. Exemption from *export tax*
8. Pioneer enterprises are entitled to *tariff* protection and *exemptions* from all taxes under the National Internal Revenue Code except income tax.

The privileges afforded *export traders* are:

1. Reduced *income tax* - 10% of export sales is deductible from taxable income
2. *Tax credit* for specific and sales taxes on local purchases for export
3. Exemption from *export tax.*

The incentives given to *service exporters* are:

1. Reduced *income tax* - 50% of foreign exchange earnings is deductible from taxable income
2. *Tax credit* for specific compensating and sales taxes and duties on materials for the production of TV or motion pictures or musical recordings, and exemption on duties and compensating tax on importations of equipment for the same purpose.

Investors in registered export producing enterprises, export traders, and service exporters are also given the same incentives afforded investors in companies registered under the Investment Incentives Act.

3. TOURISM INDUSTRY INCENTIVES DECREE (P. D. 535)

Presidential Decree No. 535 gives incentives to the industries catering to the tourist trade. These include: hotels, resort-hotels, apartment-hotels, motels, hostels, inns or pension houses, tourist villages or holiday homes, beach resorts, day or night clubs, transport operators, tour operators, golf links, country clubs, marina or water skiing or surfing facilities, restaurants or coffee shops, shopping malls, and sauna, Swedish, Turkish, and other steam bath parlors.

The incentives given by P. D. 535 to *registered enterprises* are:

Income tax incentives

1. 50% of foreign exchange earnings shall be deductible from the net taxable income
2. Net operating loss carry over
3. Tax credit on withholding tax on interest on foreign loans
4. Deduction for expansion reinvestment.

Other tax incentives

1. Real estate tax exemptions
2. Tax free importations of machinery and equipment
3. Tax credit on local capital equipment procurement.

Philippine nationals who are investors in registered tourism enterprises are entitled to:

1. Tax allowance for investments
2. Capital gains tax exemption.

4. FOREIGN TRADE ZONE AUTHORITY ACT (R. A. 5490)

This Act gives the following tax incentives to producers locating their factories at the Foreign Trade Zone in Bataan:

1. Accelerated depreciation
2. Net operating loss carry over
3. Tax-free importation of machinery, equipment, raw materials, and supplies
4. Export tax exemption
5. Exemption from payment of municipal and provincial taxes.

5. NATIONAL INTERNAL REVENUE CODE (NIRC)

Among the exemptions granted by NIRC are:

1. *Shipping* - no compensating tax for the importation of passenger or cargo vessels for either coastwise or ocean-going shipping (Sec. 190 of the NIRC).
2. *Publications* - no 3% gross receipts tax for the publication or printing of any periodical which appears at regular intervals and with fixed prices for subscription or sale (Sec. 191).
3. *Exports* - no specific tax (Sec. 123), manufacturers' sales tax (Sec. 188e), or millers' tax (Sec. 189) on the manufacture of articles for export.
4. *Agriculture* - no manufacturers' sales tax on agricultural products, ordinary salt and all kinds of

fish when sold, bartered, or exchanged in the Philippines by the producers who are owners of the land where such products are produced.

Cottage industries - no privilege tax (Sec. 182-C) or percentage tax (Sec. 188) on small industries or producers of all classes working in their own homes, consisting of parents and children.

C. Tax Aspects of Project Design

The last, and most significant part, of the taxation study, is to create a way of packaging or designing the project so as to minimize the tax liabilities of the project and its owners. Legal provisions insofar as they apply to the project should be reviewed in order that the liabilities for the taxes may be reduced. The various tax exemption laws and regulations should also be examined. Two possible project design areas are discussed—development contract and form of business organization.

Development Contract. A land developer signing up a contract with a landowner is normally subjected to the 6% real estate brokers' tax. However, the arrangement between the landowner and the developer may be packaged or designed in such a way so that a greater part of the compensation due the developer may be considered as payment for construction work to be done on the raw land. Thru this design, said part of the compensation shall be taxed, not at 6% (brokers' tax) but on a much lower 3% (contractors' tax).

D. Form of Business Organization

The study of the form of business organization has to consider:

1. Income Tax
2. Sales tax
3. Duties.

1. INCOME TAX FOR ALTERNATIVE FORMS OF BUSINESS ORGANIZATION

Due to the varying tax exemptions, tax rates, and treatment of pre-operating expenses, the income tax liability of a project may vary under different organizational set-ups. The most advantageous form of organization may not be ascertained unless the amount and timing of (1) the taxable net profit or net loss, and (2) the distribution of the profits, are first estimated.

Applicability and Rates. A single proprietorship by itself is not a separate entity for income tax purposes. The proprietor should add his income from the business to his income from other sources in computing his personal income tax. The tax rates for Filipino citizens and resident aliens range from 3% for the first ₱2,000, to 70% for income over ₱500,000.

A registered general partnership is also not subject to income tax. However, a partner should add to this income from other sources, his share in the income of the partnership, whether or not distributed.

A corporation is subject to 25% on the first ₱100,000 taxable income, and 35% on the balance.

Pre-Operating Expenses. The pre-operating expenses of a single proprietorship or a partnership may be deducted in full in the year they are incurred. However, those of a corporation may be deducted over a period of 50 years which is its life span. It may be emphasized here that for management purposes, the pre-operating expenses may be amortized for three, five, or ten years.

This provision in the tax laws may be taken advantage of in this way: if the pre-operating expenses are quite high and are to be incurred in a year when the owner is expecting a sizeable taxable income from other sources, the project may be organized, initially at least, as a single proprietorship or partnership. In this manner, the pre-operating expenses can be deducted from the income from other sources in order that the owner's income tax may be reduced:

	Corporation*	Partnership* or Single Proprietorship
Business - 1978		
Pre-operating expenses	₱50,000	₱50,000
*Owner** - 1978		
Income from other sources	₱60,000	₱60,000
Less pre-operating expenses		50,000

	Corporation*	Partnership* or Single Proprietorship
Taxable income	₱60,000	₱10,000

* Assume that the corporation or partnership is practically 100% owned by one person.

Projected Net Loss. The net loss incurred by a single proprietorship or partnership may be deducted from the income of the owners from other sources. However, the net loss of a corporation may not be similarly deducted by its stockholders. Because of this difference, it may be advisable to initially organize a business as a single proprietorship or a partnership if it is expected that the business will be losing during the first few years:

	Corporation*	Partnership* or Single Proprietorship
Business - 1979		
Net Loss	₱40,000	₱40,000
*Owner** - 1979		
Income from other sources	₱60,000	₱60,000
Net loss from business		40,000
Taxable income	₱60,000	₱20,000

* Assume that the corporation or partnership is practically 100% owned by one person.

Projected Net Income. When it is expected that the business will be gaining and that *all of the net income will be distributed* to the owner(s), it may be preferable to have a partnership or single proprietorship rather than a corporation. The reason is that in a corporation, the income is taxed twice:

	Corporation*	Partnership* or Single Proprietorship
Business -		
Net Income	₱200,000	₱200,000
Income tax -	60,000	

	Corporation*	Partnership* or Single Proprietorship
Net income after tax	₱140,000	₱200,000
*Owner** -		
Income from the business (as above)	₱140,000	₱200,000
Income from other sources	70,000	70,000
Total income	210,000	270,000
Income tax (a)	102,000	142,000
Disposable income	₱108,000	₱128,000

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*Assume that the corporation or partnership is practically 100% owned by one person.

(a) Assume a ₱10,000 exemption.

When it is projected that the business will be gaining but *no portion of the net income will be distributed* to the owner(s), it may be advantageous to have a corporation rather than a partnership or single proprietorship. This is because in a corporation, the stockholders will be taxed only if they receive dividends. However, in a partnership or single proprietorship, the owners will be taxed on the income of the business although such income is retained in the business:

	Corporation*	Partnership* or Single Proprietorship
Business -		
Net income	₱200,000	₱200,000
Income tax	60,000	-
Net income after tax	₱140,000	₱200,000
*Owner** -		
Income from the business	₱ -	₱ -
Income from other sources	70,000	70,000
Total income	70,000	70,000
Income tax (a)	18,000	142,000
Disposable income (deficiency)	₱ 52,000	(₱ 72,000)

	Corporation*	Partnership* or Single Proprietorship
Owner - increase in net worth, and disposable income -		
Increase in value of business	₱140,000	₱200,000
Disposable income (deficiency)	52,000	(72,000)
Total	₱192,000	₱128,000

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* Assume that the corporation or partnership is practically 100% owned by one person.

(a) Assume a ₱10,000 exemption.

2. INCOME TAX FOR DIFFERENT TYPES OF CORPORATE SET-UP

The foregoing discussions compare the income tax liability of a corporation on one hand, and of a partnership or single proprietorship on the other. The following studies cover the income tax liability of corporations under four alternatives as applied to a specific case. It is assumed below that the estimated annual income of the existing Project A, which is under Corporation A is ₱300,000, and that the projected income of the new Project B is ₱200,000.

Alternative*	Project B is to be under	Total income tax liability of Project A & B
1	Corp. A, an existing corporation	₱165,000
2	Corp. B, a new subsidiary of Corp. A	167,000
3	Corp. B, a new independent corporation	155,000
4	Corp. B (for manufacturing), and Corp. C (for marketing), new sister corporations	145,000

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* See Exhibits 4 and 5 in Chapter IV, Vol. 1.

The tax liability is highest under Alternative 2 because 25% of the dividends to be paid by Corporation B to Corporation A is to be included in the latter's taxable income.

The tax liability under Alternative 3 is lower than that of Alternative 1 because in the former ₱200,000 is taxed at the low 25% rate, while in the latter only ₱100,000 is so taxed.

The liability under Alternative 4 is ₱10,000 lower than that of Alternative 3 because in the former ₱300,000, and not only ₱200,000, is taxed at 25%.

Existing Corporation - Alternative 1. If Project B is going to be under the existing Corporation A, the net income of Project B shall be added to that of Project A, and the tax shall be computed on the total amount:

Net income:		
Project B		₱200,000
Project A		300,000
Total for Corporation A		₱500,000
Income tax:		
On the first ₱100,000 - at 25%	=	₱ 25,000
On the remaining ₱400,000 - at 35%	=	140,000
Total for Project A and B		₱165,000

Subsidiary Corporation - Alternative 2. If Project B is going to be under a new Corporation B, which will be a subsidiary of Corporation A, the two corporations shall be taxed individually. However; 25% of the dividends received by Corporation A from Corporation B shall be added to the former's taxable income:

Corporation B -		
Net income before tax		₱200,000
Less income tax -		
On the first ₱100,000	₱25,000	
On the balance	35,000	60,000
Net income after tax - assumed to be paid to Corporation A as dividend		₱140,000

Corporation A -	
Net income for tax purposes	
From operations of Project A	₱300,000
From Corporation B - taxable is 25% of ₱140,000	35,000
Total	₱335,000
Income tax -	
On the first ₱100,000 - at 25%	₱ 25,000
On the remaining ₱235,000 at 35%	82,000
Total	₱107,000

Thus, the *total income tax* is ₱167,000

Corporation B	₱ 60,000
Corporation A	107,000
	₱167,000

Independent Corporation - Alternative 3. If the new Corporation B is not going to be a subsidiary, but rather will be owned directly by the stockholders of Corporation A, the tax liabilities for both corporations will be only ₱155,000:

Corporation A -			
For the 1st ₱100,000 - at 25%	=	₱25,000	
For the remaining ₱200,000 - at 35%	=	70,000	
Total for Corporation A	=		₱95,000
Corporation B -			
For the 1st ₱100,000 - at 25%	=	₱25,000	
For the remaining ₱100,000 - at 35%	=	30,000	
Total for Corporation B	=		60,000
Total for Corporation A and B			₱155,000

Sister Corporations - Alternative 4. Instead of setting up only one new corporation for Project B, two may be set up—one each for the manufacturing and marketing operations. Under this arrangement, the total tax liability will be lowered because an additional ₱100,000 will be reclassified from the 35% bracket to the 25%. Adopting this structure will reduce the tax liability by ₱10,000. This represents 10% (35% - 25%) of the ₱100,000 which is so reclassified.

The tax liability under this arrangement will be ₱145,000:

Corporation A (existing corporation)	—	₱ 95,000
Corporation B - new manufacturing corporation (assume the net income is ₱100,000) at 25%	—	25,000
Corporation C - new marketing corporation - ₱100,000 at 25%	—	25,000
Total		₱145,000

3. SALES TAX

In general, it may be advisable to have two corporations instead of one in order to reduce the sales tax. However, extreme caution should be observed in spliting a project into two. If the project is going to export, both the manufacturing and export operations should be under one corporation only.

Domestic Sales of Goods in General - Alternative 4. The sales liability may be reduced by setting up two corporations as in Alternative 4. The tax will then be based on the sales made by the manufacturing corporation to the marketing arm. Since the selling prices involved in these sales are much lower than the prices to the public, the tax is correspondingly lowered.

Assume, for instance, that if only one corporation is set up, the selling price to the public is ₱150. If there are no tax-paid raw materials involved, the sales tax will be 7% of ₱150 or ₱10.50. If two corporations are set up, and the selling price of the manufacturing to the marketing corporation is ₱80, the tax will be reduced to ₱5.60. The resulting income statement on a *per unit basis* may be as follows:

	One	Two Corporations	
	Corporation	For Manufacturing	For Marketing
Sales	₱150.00	₱80.00	₱150.00
Cost of sales	50.00	50.00	80.00
Sales tax	10.50	5.60	

	One	Two Corporations	
	Corporation	For Manufacturing	For Marketing
Marketing expenses	30.00		30.00
Administrative expenses	20.00	10.00	10.00
Total	110.50	65.60	120.00
Net income before income tax	₱ 39.50	₱14.40	₱ 30.00

Under the second set-up (with two corporations), the combined net income is ₱44.40.

Care should be taken in splitting the project into two corporations as the Bureau of Internal Revenue may question this. This is specially true if the two corporations have substantially the same set of stockholders and managers, and if it is determined that the motive behind the setting up of two corporations is the evasion of taxes.

Domestic Sales of Airconditioners - Alternative 5. If a project is going to make and sell airconditioners and refrigerators, and at least 60% of the component parts shall be manufactured by the project, it will be inadvisable for the parts manufacturing and assembly operations to be covered by two distinct legal organizations, as shown in Alternative 5, Exhibit 3 of this chapter. Under this set-up, the sales of Corporation B to Corporation C shall be subject to a sales tax of 15%. On the other hand, if the manufacturing and assembly operations are in one organization, the sales tax shall be 7% only.

Export Sales - Alternative 6. If the project is going to export its manufactured articles, the manufacturing and export operations should not be covered by two separate organizations as shown in Alternative 6 in Exhibit 3. If this is done, a sales tax shall be imposed on the sales of the manufacturing organization to the export outfit. The tax may be legally avoided by combining both the manufacturing and export operations in only one corporation.

However, if Corporation C is an export trader duly registered under Republic Act 6135 (Export Inventives Act), Corporation C may claim, as tax credit, the sales tax on the goods purchased by Corporation C from Corporation B and actually exported by Corporation C.

4. DUTY DRAWBACK

Import of Raw Materials - Alternative 7. If the project is going to import some of its raw materials and export the manufactured articles, it will be inadvisable to set up two corporations as shown in Alternative 7, Exhibit 4. Assume, for instance, that the project involves the local manufacture of glue out of imported raw materials, and the manufacture of plywood using the glue. If the set-up in Alternative 7 is adopted, the project will not be entitled to a refund of the duties on the importations of the raw materials used in the glue manufacture. What should be done in this case, therefore, is to have only one corporation.

Exhibit 1

EIGHT INVESTMENT PRIORITIES PLAN

For 1975-1976

(Note: NP = non-pioneer; P = pioneer)

A. *Forest products*

1. Tree farming (NP)
2. Lumber products (NP)
3. Plywood (NP)
4. Veneer (NP)

B. *Fiber products*

1. Ramie (P)
2. Pulp from indigenous raw materials (P or NP)
3. Paper integrated with pulp mill (P or NP)
4. Processed abaca fiber (NP)

C. *Crop production*

1. Peanuts (NP)
2. Sorghum (NP)
3. Soybeans (NP)
4. Rice (NP)
5. Corn (NP)
6. Grain processing (NP)
7. Processing of hybrid seeds - rice, corn, sorghum, soybeans (NP)
8. Cotton growing and ginning (NP)
9. Arrowroot starch (NP)

D. *Food processing*

1. Fruit and vegetable processing (P or NP)
2. Palm oil (NP)
3. Feed yeast (NP)
4. Processed meat (NP)
5. Processed fish (NP)

E. *Livestock and fishing*

1. Cattle (NP)
2. Hogs (NP)
3. Poultry (NP)
4. Fish (commercial deep sea) (NP)
5. Fish (inland) (NP)
6. Feed mill or plant for the manufacture of ingredient (NP)

F. *Metallic mineral products*

1. Iron ore (P or NP)
2. Copper ore (NP)
3. Copper metal (P)
4. Primary steel (P)
5. Nickel metal and alloys (P)
6. Unrefined gold (NP)
7. Refined gold (P or NP)
8. Mercury (NP)

G. *Non-metallic mineral products*

1. Coal for power generation (NP)
2. Foundry coke (P)
3. Asbestos fibers (P)
4. Refractories (P or NP)
5. Glass containers (NP)
6. Lime (NP)

H. *Chemical products*

1. Salt—industrial (P or NP) and edible (P)
2. Antibiotics - tetracycline, streptomycin, and penicillin (P)
3. Chemical gypsum (NP)
4. Chemical fertilizer - nitrogenous, phosphatic (N or NP)
5. Urea - formaldehyde glue resins (NP)
6. Phthalic anhydride (P or NP)
7. Stearic acid (P)
8. Integrated vinyl chloride monomer plant (NP)
9. Polyvinyl alcohol resin (P)
10. Petroleum wax (P)
11. Carbon black (P or NP)
12. Chrome yellow and molybdate orange pigments (P)
13. Low-density polyethylene (P)
14. High-density polyethylene (P)

15. Polypropylene (P)
16. Soda ash (P)
17. Nylon fibers (P)
18. Polyester fiber (staple fiber and filament yarn) (P)
19. Spun yarn for textiles (NP)
20. Textile tops or slivers (NP)
21. Woven textiles (NP)
22. Tire cords and fish nets (P)
23. Rubber belts (P)
24. Fire hose (P)

I. *Iron or steel based industries*

1. High carbon steel wire (P)
2. Alloy steel—ingots and castings (high alloy and low alloy) (P)

J. *Hand tools*

1. Files (N or NP)

K. *Industrial machinery*

1. Shapers (P)
2. Lathes (P)
3. Drill presses (P)
4. Carbide-tipped tools (P or NP)
5. Shaft bearing products (P)
6. Speed reducers (P or NP)
7. Logging blocks of alloy steel (P)
8. Grinding balls (P or NP)
9. Globe, gate and check valves (P)
10. Shuttles (P)
11. Loom reeds (P)
12. Hydraulic excavators (NP)
13. Overhead hoists and travelling cranes (P)
14. Air compressors (P)
15. Crankshafts, connecting rods and wrist pins, for reciprocating refrigeration compressors (P or NP)
16. Rotary refrigeration compressors eccentric, roller and vane (P)

L. *Farm machinery*

1. Palay threshers (NP)
2. Disc plows, disc harrows and roto tillers (NP)
3. Grain driers (P)

M. *Fabricated metal products*

1. Steam boilers (P)
2. Oil exploration and development equipment and facilities (P)
3. Ductile iron mill rolls (P)
4. Grain storage silos (P or NP)
5. Stainless and high nickel steel tubes (P)
6. Industrial screens (for deep wells and sizesorting equipment) (P or NP)

N. *Engines*

1. Diesel engines (P)
2. High HP diesel engines (P)
3. Small gasoline engines (P)

O. *Electrical equipment*

1. Circuit breakers (P or NP)
2. Magnetic starters (P or NP)
3. Flashlights (NP)
4. Kilowatt-hour meters (P)
5. Ignition coils (P or NP)
6. High tension porcelain insulators (P or NP)
7. Power transformers (P)
8. Transceivers (P)
9. Electric tape (NP)
10. Electric motors for automotive use (NP)
11. Electronic data processing systems (P or NP)
12. PABX switching systems (P)
13. Film capacitors (P)

P. *Transport equipment*

1. Commercial vessels (such as boats, barges, tug boats and ships, excluding ocean-going ships) (P or NP)
2. Ocean-going ships (P)
3. Automotive rear axles (P)
4. Automotive propeller shafts (P)
5. Automotive clutches (P)
6. Automotive engine block (with cylinder head) (P)
7. Camshafts for engines (P)
8. Automotive lighting and signalling equipment (P)
9. Automotive gauges and instruments (NP)
10. Rims for bicycles and motorcycles (NP)

11. Spokes and nipples for bicycles and motorcycles (NP)
12. Sprockets for bicycles and motorcycles (NP)
13. Roller chain for bicycles and motorcycles (NP)
14. Motorcycles (NP)
15. Electric driven industrial vehicles (P)

Exhibit 2

SIXTH EXPORT PRIORITIES PLAN
LIST B: EXPORTABLE PRODUCTS OF PREFERRED AREAS OF INVESTMENTS

For 1975-1976

(Note: NP = non-pioneer; P = pioneer)

A. *Food products*

1. Processed fruits and vegetables (NP)
2. Spices (NP)
3. Processed seaweeds (NP)
4. Castor oil (NP)
5. Rice bran oil (P)
6. Refined sugar (NP)
7. Processed seafoods (NP)
8. Glucose powder (including cassava starch production) (NP)

B. *Animal feed*

1. Fodder (cattle feed) (NP)

C. *Processed rubber product*

1. Crumb rubber (NP)

D. *Wood products*

1. Blockboard and blockboard cores (NP)
2. Particleboard (NP)
3. Builders' woodwork, including prefabricated and sectional buildings or components of wood (NP)
4. Cellulosic staples for specialty pulp (P)
5. Fiberboard (NP)
   Condition: At least 80% of production must be exported
6. Furniture (NP)
7. Toys (NP)

E. *Leather products*

1. Footwear (NP)

F. *Metallic mineral products*

1. Beneficiated nickel silicate ore (NP)
2. Ferro-alloys (NP)

G. *Non-metallic mineral products*

1. Silicon metal (P)
2. Silicon carbide (P)
3. Non-metallic roofing materials (P/NP)
4. Ceramic bathroom accessories (NP)
5. Vitrified tiles (NP)
6. Jewelry (P/NP)

H. *Chemicals and chemical products*

1. Refined glycerine (NP)
2. Alcohol (fermentation) (NP)
3. Titanium dioxide (P)
4. Hydrogen peroxide (P/NP)
5. Methanol (P)
6. Furfural (P)
7. Cocochemicals (such as esters, fatty alcohols and derivatives thereof from coconut oil) (P/NP)
8. Blowing agents for rubber and plastic compound (P)
   a. Dinitro pentamethylene tetramine
   b. Di-azo-carbomide compound
9. Nicotine sulfate (P)
10. Sucro-chemicals (such as ribonucleic acid, citric acid, sorbitol) (P/NP)
11. Essential oils (NP)
12. Activated carbon (P)
13. Disposable hypodermic needle and syringe (P/NP)
14. Fiber-tipped pens (P/NP)

I. *Textile products*

1. Woven fabrics (NP)
2. Acrylic fiber (P)
3. Non-woven fabrics (P/NP)
4. Knitted fabrics (NP)
5. Made-up articles of textile, plastic, rubber and leather (NP)
6. Garments (NP)
   Condition: At least 70% of total production must be exported.

J. *Fabricated metal products*

1. Oxygen cylinders (P)
2. Pliers and wrenches (P)
3. Dies, molds and toolings (P/NP)
4. Flatware (P/NP)
5. Locks (NP)
6. Buckles and metal plated accessories (NP)
7. Kiln dryers (P)
8. Belt sanders (P)
9. Clocks and watches and parts thereof (P)
10. Cigarette lighters (NP)

K. *Electrical machinery, equipment and parts*

1. Hermetic compressors (P)
2. Precision tools and dies, parts of machinery and equipment for semi-conductor manufacture (P)
3. Electrical and electronic machinery, equipment, apparatus, and their parts and components (P/NP)
4. Graphite electrode (P)

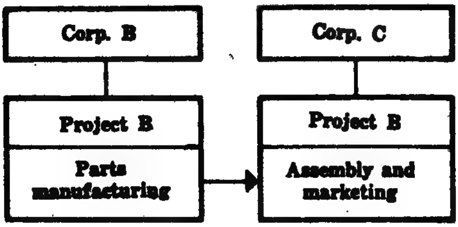
L. *Transport equipment*

1. Motor vehicle transmission (P)
2. Pleasure boats (NP)

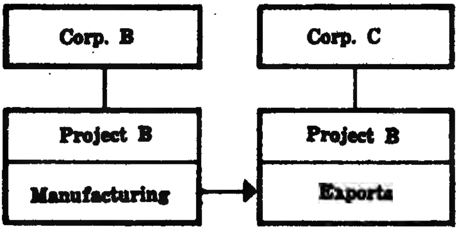
Exhibit 3

TAX DISADVANTAGEOUS SET-UPS DOMESTIC SALES OF AIR-CONDITIONERS, AND EXPORT SALES

***Alternative 5* — Domestic sales of airconditioners — sales tax at 30%.**



***Alternative 6* — Export sales — sales tax is imposed on the transfer of goods from Corp. B to Corp. C.**



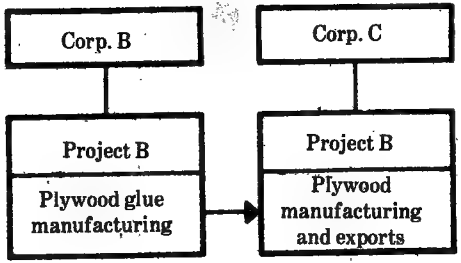
LEGEND—

CORP. B and CORP. C—The new sister corporations to be established.

PROJECT B—The new project.

Exhibit 4

TAX DISADVANTAGEOUS SET-UP IMPORT OF RAW MATERIALS



Alternative 7—Import of raw materials for the processing of glue which is ultimately used in the manufacture of plywood for exports—no drawback is allowed on the duties paid on the importation of glue raw materials.

LEGEND—
Corp. B and Corp. C—The new sister corporations to be established
Project B—The new project.

Chapter III

Financing Study*

THIS CHAPTER AIMS TO GUIDE THE MANAGEMENT IN working out the most adaptable financing scheme for a project, considering the projects' peculiar requirements. The financing scheme refers to the types of financing to be obtained (as equity or long-term loan), the particular terms for each type of financing (as interest rate or repayment period), and the specific sources.

Selecting the scheme for a project generally involves the following steps:

1. Determine the *specific requirements of the project* with respect to the types and costs of the assets to be acquired. This is essential as the type of financing may depend on the nature of the asset to be acquired. For instance, a long-term loan or equity is normally required to finance the acquisition of the plant site, the construction of buildings, and the importation of machinery. On the other hand, short-term loans may finance the inventories.

2. Identify the *alternative sources of financing* which may be tapped, and assess their financing policies and practices. The objective of this is to find out the sources of financing whose

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* Foreign and local financial institutions as sources of financing are covered in a separate publication, *Financing Philippine Business Enterprises* by Vicente Muro.

operations are geared to finance the specific types of assets which are to be acquired by the project.

3. Study the desirable *debt-equity ratio*, or the apportionment of the total financing requirement into that portion which will be met by debt financing or loans, and that portion which will be furnished by equity capital or stockholders' contributions. The purpose of this study is to determine the financing structure which will:

   a. Enable the proponents to control the management of the project;
   b. Miximize the rate of return on the stockholders' investment; and
   c. Enable the project to obtain debt financing on reasonable terms.

4. Establish the project's *financing policy on outside financing*—whether to maximize the amount of outside financing, or obtain outside financing only when the cost thereof is reasonable.

5. Ascertain the *effective cost of financing* from each source. Only in exceptional cases is the effective cost equivalent to the nominal interest or dividend rate. Service fees, guarantee fees, foreign exchange fluctuation risk premiums, and tax advantages are some of the factors which account for the difference between the effective cost and the nominal rate. If the project proponents have adequate financial resources on their own, they should obtain outside financing only if the effective cost is relatively low or reasonable.

6. Determine the *maximum amount of financing* which might be obtained from each alternative source. If the proponents are deficient in capital, their choice of the financing sources will be governed more by the amount which they can obtain from each source rather than by the effective cost of financing. For instance, they may prefer to obtain a 14% loan from a financial institution which gives an 80% loan value on the collaterals, rather than a 12% loan based on a 50% loan value.

7. Work out the *financing scheme* by considering the objectives of the proponents, the financing requirements of the project, the desirable debt-equity ratio, the effective cost of financing from each alternative source, and the maximum amount which may be obtained from each source. For instance, if one of the objectives of the proponents is to build up the goodwill of the firm, they have to allow for some shares to be made available to the public. If the proponents would like to control the management but are deficient in capital

resources, they have to tap the sources which can give the maximum amount although at a high cost.

A. Project Requirements

The best way of determining a project's financing requirements is by preparing the asset side of its projected balance sheet. This shall give an idea of the specific assets to be financed:

	Period			
	Pre-Operating		Operating	
	Year 1	Etc.	Year 1	Etc.
Foreign exchange cost				
Imported machinery	$	$	$	$
FOB cost				
Freight and insurance				
Technical assistance fees	___	___	___	___
Total in U. S. dollars	$___	$___	$___	$___
Total in Philippine pesos at $1 = ₱7.50	₱___	₱___	₱___	₱___
Peso component				
Imported machinery				
Import taxes				
Other import charges				
Installation charges				
Local equipment				
Buildings				
Land				
Pre-operating expenses				
Inventories				
Raw materials				
Work in process				
Finished goods				
Accounts receivables				
Working cash balance				

	Period			
	Pre-operating		Operating	
	Year 1	Etc.	Year 1	Etc.
Contingencies*				
Others	___	___	___	___
Total	₱___	₱___	₱___	₱___
Grand total (foreign exchange and Philippine currency costs)	₱___	₱___	₱___	₱___

* Cost over-runs, price increases, project implementation schedule delays, etc.

The above data which may be based on the projected cash flow statement as discussed in Chapter IV should be known before working out the financing scheme because:

1. The nature and value of the available *collaterals* may influence the source and amount of financing. For instance, the machinery, equipment, buildings, and land may be mortgaged to the NIDC, DBP, GSIS or SSS. The inventories may be used to secure short-term loans from commercial banks. The receivables may be sold to finance companies.

The amount of financing which may be obtained depends, among other things, on the loan values that may be given as the collaterals.

2. The *foreign exchange cost* and the total *project cost* may affect the amount of the financing which may be obtained from certain foreign sources. For instance, the US. Export-Import Bank may finance up to 100% of the foreign exchange cost if this does not exceed 60% of the total project cost.

3. The *currency* required may affect the choice of the financial institution to be tapped. For instance, peso costs are normally financed only by local institutions.

4. The *source of machinery* may also affect the decision on the source of financing to be approached. This is so because certain sources are tied up with the procurement of machinery in specific countries, thus:

Financing source	Country of procurement
U.S. Export-Import Bank	U.S.
Export-Import Bank of Japan	Japan
Export Development Corporation	Canada

B. Alternative Sources of Financing

Possible Sources. After having determined the specific assets to be acquired, a survey should be made of the different possible sources of financing which may be availed of. The possible *sources* are:

1. Project promoters and their close associates;
2. Individual residents or foreigners, who are invited either personally, or through public offerings (through the stock exchanges and underwriters);
3. Corporate investors, as foreign licensing firms coming in under joint-venture arrangements;
4. Engineering or management firms preparing some studies for the project;
5. Machinery suppliers;
6. Raw materials suppliers;
7. Sellers of project sites;
8. Customers;
9. Financial institutions; and/or
10. Related projects or enterprises which generate funds from their profitable operations.

The financial assistance from the above sources may come in under any of the following *forms*:

1. Common stock;
2. Preferred stock;
3. Loans (long-term or short-term);
4. Advances (more temporary and/or informal in nature than the loans);
5. Purchase on deferred payment plan or on credit;
6. Sales of receivables to finance companies; and
7. Lease of land, buildings, and equipment rather than outright purchase.

The project *promoters* and individual and corporate *investors* normally invest in the form of common stocks, and occasionally, in preferred shares, loans, and advances. The *engineering firm* which prepared some studies may be given some shares of common stock as part payment for its services. The *machinery supplier* may offer financing through its sale of equipment on a deferred payment basis. This is normally for periods up to five years, at 6%-12% interest, with 10-20% downpayment. The raw *materials supplier* may sell on credit for 30-60, or even 90 days. The *land owner* may sell the project site on installment. The *customers* may invest in capital stock or may give advance payments for their purchases.

Possible Sources and Specific Assets. Alternative financing sources may be tied with the specific assets to be acquired. Thus:

Asset to be financed	Alternative financing sources
1. Cash balance	a. Commercial banks
	b. Money market
	c. Stockholders
2. Accounts recivable	a. Commercial banks
	b. Finance companies
	c. Factoring companies
	d. Money market
	e. Stockholders
3. Finished goods inventories	Same as for receivables
4. Raw materials inventories	a. Suppliers
	b. Commercial banks
	c. Money market
	d. Stockholders
5. Land	a. Development finance companies
	b. Life insurance companies
	c. Land owners (thru lease)
	d. Stockholders
6. Buildings	Same as for land
7. Imported machinery—foreign exchange component	a. Supplier
	b. Foreign export financing institutions
	c. Development finance companies
	d. Stockholders

8.	Imported machinery—peso component	a. Commercial banks b. Development finance companies c. Stockholders
9.	Local equipment	a. Commercial banks b. Leasing companies c. Development finance companies d. Stockholders
10.	Pre-operating expenses	a. Commercial banks b. Stockholders
11.	Contingencies	a. Stockholders

Practices in Tieing Sources of Financing With Specific Assets. The alternative sources of financing to be considered should conform with sound financial practices, among which are:

1. *Short-term* financing should be utilized for short-term assets; long-term financing, for long-term assets
2. *Foreign currency* financing should be used for foreign currency costs or for foreign currency-earning projects.

These two practices follow the same basic concept: the type of financing should be matched with the type of asset to be financed.

Term of Financing. A short-term financing is for 1 day to 1 year, and long-term, for over 5 years. A short-term financing is normally easier to obtain than long-term financing, but is more costly (higher interest rate).

Since short-term financing is easier to obtain, some projects finance their long-term assets (land, buildings, and machinery) with short-term sources. This practice works against the project in 2 ways:

1. It increases the interest costs, thus reducing the project's feasibility;
2. Since the financing shall be maturing several times during the lifetime of the asset financed, management has to devote so much time in arranging for the refinancing. Their failure to work out a refinancing on time shall likely result in penalty charges as well as reduction in the credit standing of the enterprise.

Currency of Financing. A foreign currency loan has a cost: the foreign exchange risk. If a $100,000, 5-year (payable in lump-sum after 5 years), 8% dollar loan were obtained today, it shall bring in ₱700,000 in peso proceeds (at about ₱7 = $1). However, if 5 years from now the rate shall be ₱8.40 = $1, then ₱840,000 shall be used to repay the $100,000 loan. The effective interest rate will be roughly 12%:

Foreign exchange adjustement* (₱840,000 less ₱700,000)	₱140,000
As % of ₱700,000 loan proceeds	20%
Annual exchange adjustment (20% over 5-year term of the loan)	4%
Nominal interest rate	8%
Effective interest rate	12%

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* Simple rate; not on a compounded basis. A more sophisticated illustration using compounded interest is shown in Part E below.

In the above illustration, the exchange rate was assumed to increase 20% in 5 years. But in practice, the increase (or decrease) cannot be predicted. Hence, obtaining a sizeable foreign currency loan exposes a project to a risk of unknown magnitude.

However, this risk will be covered, at least partially, if:

1. The loan proceeds are invested in foreign currency costs; or
2. The loan proceeds are invested in foreign currency-earning projects.

In Item 1, the increase in the peso cost required to pay the loan shall be compensated by the increase in the market value of the imported equipment.

In Item 2, the increase in the peso cost to pay the loan shall be covered by the increase in the peso proceeds from the export earnings.

C. Debt-Equity Ratio

Keeping in mind the financing requirements of the project on one hand and the possible sources of debt and equity financing on the other, the debt-equity ratio may be worked out. The ratio refers to the proportion of the debt financing or loans, to the stockholders' contributions. The ratio is significant because:

1. The performance of the project is affected by the ratio;
2. The rate of return on the common stockholders' investment depends on the ratio, and
3. Some lending institutions require the attainment of certain ratios.

Performance of the Project. The operations of a project may be adversely affected if the equity capital is small as compared with the borrowing:

1. Difficulty may be encountered later on in raising additional borrowed capital. This is specially true if the physical assets are already mortgaged.
2. Long-term creditors with significant interests in the firm may require a seat in the board of directors.

Return on Stockholders' Investment. The rate of return on the common stockholders' investment will be affected by the debt-equity ratio if the rate of return on the total investment—investment of both stockholders and lenders—varies from the interest rate on borrowed capital. If the rate of return on total investment is higher than the interest rate, the rate of return on the stockholders' investment increases if the stockholders' investment is decreased.

Assume for instance that a project, requiring a total investment of ₱10,000, will generate an annual return of 15% or ₱1,500. If ₱3,000 of the total requirement comes from lenders at 10%, the return on the stockholders' capital will be 17%:

Financing from	Amount of investment	Return	
		Amount	Rate
Lenders	₱3,000	₱300	10%
Stockholders	7,000	1,200	17%
Total	₱10,000	₱1,500	15%

Since the rate of return on the total investment is higher than the interest rate on borrowed capital, the rate of return on the stockholders' capital will increase (to 22%) if the stockholders' capital is decreased (from ₱7,000 to ₱4,000):

Financing from	Amount of investment	Return Amount	Return Rate
Lenders	₱6,000	₱ 600	10%
Stockholders	4,000	900	22%
Total	₱10,000	₱1,500	15%

Requirement of Lending Institutions. Certain lending institutions require the attainment of a prescribed debt-equity ratio. The Development Bank of the Philippines, for instance, normally require that the total borrowings of a project should not exceed 60%-75% of the total investment requirements.

D. Policy on Outside Financing—Reasonable Cost of Financing vs. Maximum Amount of Financing

In deciding on the specific financing sources to be tapped, project management may adopt either one of 2 approaches:

1. Consider the financing sources which offer the *lowest cost,* irrespective of the amount which may be obtained; or
2. Consider the sources which give the *maximum amount of financing,* irrespective of the cost.

These 2 approaches are exclusive of each other. A development finance company may offer a 12% loan on a 60% loan value on land. Although the interest cost is relatively low, the amount of financing which can be obtained is limited by the loan value of the land to be mortgaged.

On the other hand, a lender may offer financing without any physical security—but at 48% interest.

The first approach is normally followed by projects which:

1. Are proven to be highly *viable*—in this case the project can easily attract outside financing; and/or
2. Are backed up by proponents with *adequate resources*—in this case, that portion of the project's financing requirements which cannot be met by cheap sources of outside financing can be easily provided for by the proponents themselves.

E. Effective Cost of Financing

The determination of the effective cost of financing from each of the financing sources would involve a careful appraisal of their individual features.

For preferred shares, this will cover a consideration of the dividend rate, preference over the common shares as to dividend, accumulation of the dividends, and sharing with the common stockholders on the profit over the basic dividend.

For purchases on a deferred payment plan, the effective cost of financing will include the interest and the price differential between the machinery to be acquired for cash and that to be acquired on credit.

For loans, the following factors should be considered, in addition to the basic interest:

1. Currency of repayment;
2. Amount of the financing which may be obtained, and collaterals required;
3. Repayment period;
4. Fees and expenses;
5. Tax exemptions;
6. Withholding tax;
7. Required source of procurement;
8. Time involved in getting the financing;
9. Time of paying the interest; and
10. Deposit requirements.

The effect of fees, tax exemptions, withholding tax, and required source of procurement, on the over-all cost of financing may be readily quantified. The effect of the other factors may be quantified only after making certain assumptions.

1. CURRENCY OF REPAYMENT

The currency in which the financing is obtained does not matter much, as foreign exchange currencies are freely convertible to pesos, and vice-versa. What counts, however, is the currency of repayment. If it is in dollars, the project has to bear the foreign exchange risk. The current peso-dollar rate is roughly ₱7.00 = $1.00. However, there is no assurance that this rate will remain static in the future.

The effect of the foreign exchange risk on a project may be quantified only after predicting or assuming the effective rate of exchange at the time of the loan repayment. This is illustrated as:

Assumed Data:

1. Amount of loan—$500,000.
2. Amortization period—5 years, at $100,000 a year.
3. Interest—10% a year, based on the diminishing balance of the principal
4. Peso-dollar rates:
   a) At the time loan is obtained, and for 2 years thereafter—₱7.00 = $1.00
   b) For the next 3 years—₱8.00 = $1.00.

Analyses: Although the nominal interest is 10%, the effective cost of financing is 12%. The additional 2% is due to the increase in the exchange rate and is obtained through trial-and-error computations using the present value concept as discussed in Chapter IV, Part D. The computation which gives the 12% rate is as follows:

Payments

End of Year	Principal	Interest	Total	Value of $1	Pesos
1	$100,000	$50,000	$150,000	₱7	₱1,050,000
2	100,000	40,000	140,000	7	980,000
3	100,000	30,000	130,000	8	1,040,000
4	100,000	20,000	120,000	8	960,000
5	100,000	10,000	110,000	8	880,000

Value of payments

End of year	Payment	Present value factor if interest rate is at 12%	Value start of first year
1	₱1,050,000	.89	₱ 930,000
2	980,000	.80	780,000
3	1,040,000	.71	740,000
4	960,000	.64	610,000
5	880,000	.57	500,000
Total	₱4,910,000		₱3,560,000
Value of proceeds— $500,000 at ₱7			₱3,500,000

The above table shows:

1. The peso proceeds from the $500,000 loan is ₱3,500,000 when converted at ₱7,00 = $1.00; and
2. The value of the actual peso payments will equal the ₱3,500,000 proceeds only if the interest rate of 12% is used. The 12% is then the effective cost of financing.

2. AMOUNT OF LOAN AND COLLATERAL REQUIREMENTS

The stockholders should normally maximize the amount of long-term loans and minimize the short-term loan and stockholders' equity because:

1. That portion of the total investment requirements which cannot be met by long-term loans has to be met by short-term loans or by stockholders' contribution. The interest on short-term loans is higher than that on long-term loans. The difference is very significant when all the collaterals are used for the long-term loans, so that the short-term loans have to be unsecured.
2. The expected rate of return on the stockholders' investment is normally higher than the rate of interest on the long-term loan. This is so because investment in capital stock is more risky than investment in long-term loans.

The over-all cost of financing can be decreased if the amount of long-term debt financing is increased. This is illustrated as:

Assumed Data

1. Total investment required - ₱6,000,000
2. Long-term loan—
   If from Bank A - ₱4,000,000 at 11%; or
   If from Bank B - ₱3,000,000 at 11%
3. Balance of financing—short-term financing and stockholders' equity—assumed at 17%.

Analyses: If Bank A is going to be tapped, the annual cost of money for the project is 13%:

Bank A	₱4,000,000 at 11%	=	₱440,000
Balance	2,000,000 at 17%	=	340,000
Over-all	₱6,000,000 at 13%	=	₱780,000

If Bank b is going to be tapped, the cost of money will be 14%:

Bank B	₱3,000,000 at 11%	=	₱330,000
Balance	3,000,000 at 17%	=	510,000
Over-all	₱6,000,000 at 14%	=	₱840,000

Hence, the project will be more profitable if it can obtain more long-term financing.

Determination of the Amount Which May be Borrowed. The amount which may be obtained is the lowest of:

1. A specified amount—for loans from institutions which have set an upper limit on individual investments;
2. A certain percentage of the total cost of the project, less borrowings from other sources—for loans from institutions which prescribe a debt-equity ratio;
3. A certain percentage of the total foreign exchange cost—normally required by foreign lending institutions; and
4. A certain percentage of the market value of the collaterals.

The above factors may be illustrated by the use of data pertaining to a hypothetical project.

Assumed Project Data

1. Type of project: New
2. Financing requirements:

Machinery—CIF $1,000,000 or	₱7,000,000
Installation and other charges	1,000,000
Machinery installed cost	8,000,000
Land and buildings	3,000,000
Working capital	2,000,000
Total project cost	₱13,000,000

3. Proposed short-term loan from commercial banks—without collaterals, at 14%	₱4,000,000

Assumed Lending Policy of Financial Institution:

1. Upper limit on individual loan = $10,000,000
2. Financial institution's loan as a =

percentage of project's total cost 50%

3. Financial institution's loan as a percentage of total foreign exchange cost = 100%
4. Financial institution's loan as a percentage of value of collateral (loan value) = 100%

Applications

	Criteria	Maximum amount
1.	Individual loan	\$10,000,000 = ₱70,000,000
2.	Loan as % of project's total cost = 50% of ₱13,000,000	\$ 929,000 = ₱6,500,000
3.	Loan as % of total foreign exchange cost = 100% of \$1,000,000	\$1,000,000 = ₱7,000,000
4.	Loan as % of value of collateral = 100% of ₱8,000,000 machinery installed cost	\$1,143,000 = ₱8,000,000
5.	Amount which may be obtained (lowest of above)	\$ 929,000 = ₱6,500,000

3. REPAYMENT PERIOD

Ideally, the repayment schedule should be such that the amortizations on the principal and the interest payments can be met by the expected cash generation of the project. As cash generation normally starts at the second or third year of commercial operations, the repayment period should commence at about this time. If the first amortization falls due while the project is not yet in operation, short-term loans with higher interest rates have to be obtained in order to meet the earlier amortizations.

4. FEES AND EXPENSES

Commitment Fees. Some lending institutions (such as the World Bank, International Finance Corporation and certain U.S. Edge Act corporations) charge a commitment fee, which is based on the unused balance of the approved loan. This fee increases the effective cost of financing.

Guarantee Fees. Certain foreign financial institutions as commercial banks do not require collaterals. However, they may require the guarantee of a local bank, which may take the form of a letter of credit. The local bank obtains the collaterals from the borrower and charges a guarantee fee, which is normally based on the unpaid balance of the foreign loan. The guarantee fee should be added to the interest charged by the foreign institution for purposes of cost comparisons.

Remittance Fees. In the case of foreign loans, the payment of the principal and interest is handled by local commercial banks which charge remittance fees.

Travel Expenses. The cost of sending abroad the project personnel in connection with loan applications filed with foreign institutions should be considered. The same thing is true with the expenses incurred by foreign lending institutions in sending their appraisal teams to the Philippines

Documentation Fees. Certain lending institutions normally require the borrower to shoulder the cost of certain fees, as those incurred in registering the mortgage, inspecting the collaterals, or notarizing the documents.

Consultants' Fees. Borrowers may also have to pay consultants who may be hired to prepare project studies which are required in connection with applications.

5. TAX EXEMPTIONS

The import taxes may be influenced by the source of financing. Thus, if the machineries are procured under the Reparations Program, the importations will be tax-exempt.

6. WITHHOLDING TAX

Certain countries, like the United States, France and Sweden allow their financial institutions to treat as a tax credit for purposes of computing their income tax liabilities, the 15% tax withheld by the Philippine borrowers on the remittance of interest. Other countries, however, like Switzerland, disallow the tax credit. This disallowance tends to increase the effective cost of money to the local borrowers. Thus, if an 8.5% interest (net of taxes) is agreed upon between a

Swiss bank and a local firm, the effective.cost of money will be 10% At 10%, the net remittable amount after the 15% tax is 8.5%.

7. REQUIRED SOURCE OF PROCUREMENT

The financing from certain sources are tied up with the procurement of goods in specified countries.

The provisions on the required country of procurement may be a disadvantage in the sense that the price of the machinery in the specified country may not be the lowest.

8. TIME IN GETTING THE FINANCING

A delay in obtaining the long-term financing adversely affects the project timetable and makes the project less profitable as interest is paid on the financing already obtained from the other sources, expenses are paid for personnel, and opportunities in a sellers' market are not taken advantage of Hence, it is necessary to consider the time required in obtaining financing from alternative sources. The time should cover the period to be spent by:

1. The project—in preparing the required papers, and fulfilling the conditions precedent to the release of the financing;
2. The Philippine Government—in granting the permits, as in the case of financing granted directly by the International Finance Corporation to manufacturing firms;
3. The lending institution—in evaluating and approving the application; and
4. The other financial institutions—in approving the loan guarantee in case of foreign financing.

9. TIME OF PAYING THE INTEREST

If the nominal interest is paid at the due date of a 1-year loan, together with the principal, then the effective interest is the same as the nominal interest. However, if the interest is deducted by the lender from the proceeds of the loan, and only the balance is given to the borrower, then the effective interest rate is higher than the nominal interest. This practice is called discounting.

10. DEPOSIT REQUIREMENTS

A lending institution may require that a borrower deposits part of the loan proceeds with the lender, or uses part of the proceeds in buying some shares of the preferred stock of the lender. This requirement increases the effective cost of financing.

F. Maximum Amount of Financing

If the promoters do not have adequate funds, they will not be so concerned with the effective cost of financing. Their objective would be to obtain the maximum of outside funds. To attain this objective, the promoters should:

1. Determine the long-term debt financing which may be obtained with the fixed assets as collaterals;
2. Determine the short-term loans which may be obtained, by considering the available current assets which may be pledged, and the debt-equity ratios required by the long-term financiers; and
3. Determine the equity financing which has to be put up by outsiders in order that the promoters can still control the management.

The determination of the maximum amount from each financing source is discussed below, using the data of a hypothetical Project X, which is new, privately-owned, and with a high priority.

Assumed Data. The financing requirements are assumed to be as follows:

Imported machinery:		
FOB cost	₱2,300,000	
Freight and insurance	200,000	
Total foreign exchange cost	2,500,000	
Local costs, including installation	800,000	₱3,300,000
Local equipment		400,000
Total machinery and equipment		3,700,000
Buildings	₱1,000,000	
Land	500,000	1,500,000
Total Fixed assets		5,200,000

Pre-operating expenses, excluding interest during the pre-operating period	₱ 100,000	
Inventories	700,000	
Receivables	600,000	
Cash	200,000	
Other working capital	200,000	1,800,000
Total		₱7,000,000

In an actual case, the above requirements should be broken down by year, or even by quarter, because:

1. The financing requirements will occur at different times—from a few years before the start of normal operations, up to a few years after this date;
2. Some financing may have to be availed of later than the others in order to pay off some of the financing obtained earlier; and
3. The financing requirements will be increased due to the interest on the debt financing.

For the sake of simplicity, the CIF quotation for the imported machinery is assumed to be the same for different source-countries and the tax exemption provisions are disregarded.

Amount of Financing. The amount of financing which will be obtained from a financial institution may be limited by any of the following:

1. *Availability and loan value of, collaterals.* Land, buildings, machinery, inventories, and receivables may be used as collaterals. Financial institutions give varying loan values to different types of collaterals.
2. *Assets to be financed.* Foreign suppliers, or foreign export financial institutions may finance up to 100% of FOB or CIF value of foreign machinery, but not the local costs covering import taxes and installation charges.
3. *Debt-equity ratio.* Most financial institutions require the attainment of a debt equity ratio—that is, the stockholders put up a certain percentage of the total project cost, say 40%. In this case, the total loans shall not exceed 60% of the total project cost.
4. *Minority position.* Some financial institutions may give financing in the form of common stock. If they do, they usually

prefer to take a minority position—hence they shall not invest in say more than 30% of the project's common stock.

1. LONG-TERM DEBT FINANCING

Long-term debt financing may be obtained from only one source if the financial institution can finance, and accept as collaterals, all the fixed assets to be acquired. This is true, for instance, in the case of DBP, since the financing can cover the land, buildings, and machinery. In some cases, however, the institution can finance only the machinery. This is true with the export financing institutions and machinery suppliers. In these cases, the land and buildings may be financed by a secondary source.

Amounts from the Primary Sources. The maximum financing which may be obtained from the major sources are as follows:

Export financing institutions*	
100% of FOB cost	₱2,300,000
or 100% of CIF cost	2,500,000
Foreign machinery supplier	
Normally 90% (average) of FOB cost	2,070,000
Local long-term financial institutions* (prevailing)	
60% of land	300,000
50% of machinery	1,850,000
50% of buildings	500,000

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* Specific policies of individual financial institutions are covered in another publication, *Financing Philippine Business Enterprises* by Vicente Muro.

Amounts from the Secondary Sources. If the imported *machinery* is financed by an export financing institution or the machinery supplier, the *local equipment, buildings and land* may be used to secure additional financing from a local long-term financial institution. The loan value of these collaterals depends on the institution concerned.

The amount which may normally be obtained from a local long-term financial institution is ₱300,000 on the land and ₱500,000 on the buildings as computed in the above table.

Total Amount of Financing on Fixed Assets. The total amount of financing which may be obtained by mortgaging the fixed assets (machinery, equipment, buildings, and land) are:

If imported machinery is financed by export financing institution	Export financing institution	Local long-term financing institution	Total
Imported machinery	₱2,300,000	-	₱2,300,000
Local equipment (50%)	-	₱200,000	200,000
Land (60%)	-	300,000	300,000
Buildings (50%)	-	500,000	500,000
Total	₱2,300,000	₱1,000,000	₱3,300,000
If imported machinery is financed by local long-term financing institution			
Imported machinery (50%)	-	₱1,850,000	₱1,850,000
Local equipment (50%)	-	200,000	200,000
Land (60%)	-	300,000	300,000
Buildings (50%)		500,000	500,000
Total	-	₱2,850,000	₱2,850,000

2. SHORT-TERM DEBT FINANCING

If all the fixed assets are already mortgaged, additional debt financing may be obtained in the form of:

1. Unsecured long-term loans;
2. Secured short-term loans; and/or
3. Unsecured short-term loans.

As it is normally difficult to obtain unsecured long-term loans unless from a sister company, this type is not considered here.

Secured Short-Term Loans. The inventories of ₱700,000 and receivables of ₱600,000 may be pledged to obtain short-term loans. The amount of loan which may be obtained varies a lot, depending on the individual commercial bank and finance company. It is assumed here that the secured short-term loan will be ₱600,000, or roughly 50% of the collaterals. With this, the debt financing scheme will be as follows:

Imported machinery is financed by	Export financing institution	Local long-term financing institution	Short-term loans secured
Export financing institution	₱2,300,000*	₱1,000,000*	₱600,000
Local long-term financing institution		2,850,000	600,000

* Computed in prior table.

3. EQUITY FINANCING

Most financial insitutions normally require that project proponents put up 25%-40% of the total project cost. This shall result in debt-equity ratio of from 60:40 to 75:25.

If the financial institution being tapped for long-term financing demands a 60:40 ratio, then the stockholders have to raise ₱2,800,000 (40% of the ₱7,000,000 total project cost); if the required ratio is 75:25, then the stockholders have to pay in ₱1,750,000.

Preferred Shares. Selling preferred shares to financial institutions or other investers is quite difficult, especially for new projects. Hence, preferred shares financing is not considered in this particular illustration.

Common Shares. The portion of the ₱2,800,000 or ₱1,750,000 which have to be put up by the promoers' group will vary, depending on:

1. Their financial resources;
2. Desired extent of control, and
3. The confidence they have in other possible common investors.

In order that the promoters may obtain an effective control of the project, they have to buy a little over 50% of the total capital stock issue. Thus, if the required equity is ₱2,800,000, the promoters have to raise roughly ₱1,500,000; if the equity is ₱1,750,000, they should put up about ₱1,000,000.

4. SUMMARY

Shown below are the alternative financing schemes.

	Imported machinery to be financed by	
Type and source of financing	Export financing institution	Local long-term financing institution
Secured long-term loans		
Export financing institution	₱2,300,000	
Local long-term financing institution	1,000,000	₱2,850,000
Secured short-term loans		
Commercial banks, finance companies, etc.	600,000	600,000
Common stock		
Promoters	1,500,000	1,500,000
Others	1,300,000	1,300,000
Financing gap*	300,000	750,000
Total financing required	₱7,000,000	₱7,000,000

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* May be added to the common stock financing, or may be financed by unsecured short-term loans.

The above is based on the following assumptions:

a. The financing requirements are as given earlier.
b. An export financing institution which gives 100% financing on FOB cost of machinery, may be tapped;
c. A local long-term financing institution giving a loan value of 60% on land and 50% on buildings and machinery and requiring a 60:40 debt: equity ratio may be considered;
d. There is no unsecured debt and no preferred shares;
e. A secured short-term debt financing equivalent to 50% of the value of receivables and inventories may be availed of;
f. The promoters are the majority stockholders;
g. The project can be operational at once such that all loan amortizations and interest payments can be taken out from the cash generations from operations. This stituation precludes the obtaining of additional loans which shall be used to pay off or refinance the initial loans.

Chapter IV

Financial Study

THE FINANCIAL STUDY ESTIMATES AND EVALUATES the future profitability, cash transactions, and financial condition of a project in order to guide management:

1. In selecting the form of business organization, market location, distribution channel, plant location, source of financing, and similar project specifications; and ultimately,
2. In singling out the undertaking to be launched out of several project proposals.

Different sets of financial estimates, based on varying assumptions, will help in pinpointing the most commercially feasible combination of project specifications.

An evaluation of the financial estimates will help identify the particular business venture which most likely can operate profitably, withstand adversities, generate adquate cash to service the debts, and guarantee a fair return on the stockholders' investments.

A. Financial Projections

The financial projections quantify the results of the management, marketing, technical, taxation, and financing studies. The projections estimate the future profitability, cash requirements and anticipated cash sources, and expected financial condition.

The major assumptions used in preparing the estimates should be clearly stated, as the estimates are highly contingent on the underlying assumptions.

The sales, costs of sales, expenses and cash collections and payments should be clearly established. The covering detailed computations, subsidiary assumptions, and sources of data should accompany the financial projections in the project study report.

1. PROJECTED FINANCIAL STATEMENTS

The financial estimates are summarized in the following statements:

1. The projected income or profitability statement;
2. The projected cash flow statement which shows the expected receipts and payments; and
3. The proforma balance sheet which shows the expected financial condition.

The projected statements are distinguished from the ordinary accounting statements or audited income statements and balance sheets in that the former pertain to the future and not to the past.

The projected income statement lists down the various items of revenues or incomes, and the corresponding costs and expenses, in order to arrive at the net profit on a periodic basis (annual, quarterly, or even monthly).

The projected cash flow statement is similar to a tentative cash budget. It details, on a periodic basis, the expected cash receipts and payments. The financial requirements may be broken down to show the peso and the foreign currency components.

There are two general forms of cash flow statement—the layman's version, or Form A (Exhibit 2), and the accountant's version, or Form B (Exhibit 3). Form A is easier to understand than Form B, but requires more time to prepare. Form B is more technical in nature and may be prepared only by those with accounting background.

The projected balance sheet shows the expected resources (as land and machinery) to be used by the project, and the manner in which they will be financed (as through borrowings).

Simplified financial projections for a manufacturing project are shown:

Projected income statement		Exhibit 1
Projected cash flow statement		
Form A	-	Exhibit 2
Form B	-	Exhibit 3
Projected balance sheet-	-	Exhibit 4

Periods or Dates Covered. The projected income statement covers the first few years of normal operations. If the projections are for purposes of obtaining a loan, the whole repayment period should be covered by the statement. If the projections are for the use of management, the statement is normally for three, five, or ten years, depending upon the specific purpose and the degree of reliability of the projections for the later years.

The projected cash flow statement covers (1) the pre-operating period when there are already cash transactions, and (2) the first few years of operations, covered by the related projected income statement.

The projected balance sheet may be of at least two dates: as of the start of normal operations, and as of the last day covered by the projected income and cash flow statements.

Sets of Projected Financial Statements. Normally, only one set of financial projections may be prepared. In some cases, however, it may be necessary to prepare at least two or more sets, as:

1. When management has not yet decided on certain factors which greatly affect the feasibility of the project, such as the plant location,
2. When it is quite difficult to predict the future behavior of certain factors which have a material bearing on the project—such as expected sales volume, selling price, or tax rates.

The use of two or more sets of statements for item 1 above will help the management decide which of the alternative arrangements should be adopted. Thus, if separate sets with varying assumptions as to the location are made, the management may realize that the project profitability may be maximized if it were located in one of the proposed sites. This is because the various cost elements such as cost of production, selling expenses, and administrative expenses vary with the plant location.

2. ASSUMPTIONS

At the time the projected statements are prepared, it is very likely that there are certain factors such as plant location or capacity which have a bearing on the feasibility of a project but which have not yet been decided upon. It is quite likely too that there are items—such as future tax rates or future selling prices—which cannot be forecasted with absolute certainty. As the projected statements are based on definite or specific data rather than on undecided or vague information, it is necessary to *assume* certain items—such as the plant location, or future tax rates. These *assumptions* should be made clear to the readers of the financial projections inasmuch as the results of the projections vary, depending upon the assumptions used.

Assumptions may be made for three types of items:

1. Items over which the project management has a high degree of control, but which have not yet been decided upon by management at the time the projections are being prepared. These include:

   a. The channel of distribution—if through an exclusive distributor, company-owned branches, or dealers;
   b. The plant capacity;
   c. The plant requirements—such as sources of the labor force and raw materials, and the type of power; and
   d. The plant location.

Most of the above items have to be resolved before management can decide whether or not to launch the project.

2. Items over which the project management has a low degree of control, such as:
   a. Sales volume
   b. Selling price; and
   c. Project timetable.
3. Items over which the project management has almost no control at all, such as:
   a. Tax rates and tax exemptions;
   b. Foreign exchange rate; and
   c. Price level changes.

Project Timetable. The project managment can set target dates for the completion of specific phases in the project timetable.

However, these targets normally cannot be followed due to circumstances beyond the control of management, such as defaults of the building contractor, and delays in the approval of loan applications. Usually, the actual completion dates are far behind the targets. Hence, assumptions have to be made regarding the timetable which will serve as the basis in preparing the statements.

The scheduling affects the profitability and cash requirements of a project. The length of the construction period affects the interest payments, the total cost of the buildings, and the annual depreciation. The duration of the plant break-in period affects the pre-operating expenses and the annual amortization of such expenses.

Depending upon the needs of management, a time schedule which may be more detailed than the one shown below should be made:

Event	Date or Period
1. Capital stock collections:	
Down payment	
First call, etc.	
2. Loan releases	
Bank A	
Bank B	
3. Purchase of factory site	
4. Payment for facotry site	
5. Building construction	
6. Payment for building	
7. Arrival of machinery	
8. Installation of machinery	
9. Payment for machinery	
10. Purchase of raw materials	
11. Payment for raw materials	
12. Plant break-in period	
13. Start of normal operations	

A more comprehensive schedule is shown in Part A, Chapter IV, Volume 1.

Sales Volume. The sales volume of a project depends upon the total Philippine market and the corresponding company percentage share of this market. The total Philippine market in turn depends on other factors. For instance, the market for a consumer product is affected by such factor as the Philippine population growth rate. Assumptions have to be made on the factors which ultimately affect the sales volume for the project.

Plant Capacity, Requirements and Location. These items have to be planned by management. If management has no definite plans yet, it is necessary to make the required assumptions since these items have an important bearing on the profitability and cash requirements.

If the plant capacity is high, some unused capacity may result, thereby unduly increasing the unit production cost. The cash outlay for the plant machinery and buildings will also be high.

If the plant is going to use locally available raw materials, it may have to acquire machinery for the preliminary processing thereby increasing the financing requirements. However, the cost of the resulting processed materials may be lower.

The location of the factory, too, affects the project's revenues, costs, and cash requirements. A cement project in Luzon, for example, will have a market confined to Luzon, and maybe to the Visayas.

Income Tax. Tax rates may be changed and tax exemptions granted or removed. Hence, the need for assumptions on these items. The current rates of corporate income taxes are:

For the first ₱100,000	-	25%
For the balance	-	35%

Tax Exemptions. Shown in Chapter II are the industries covered by the Investment Priorities Plan and Export Priorities Plan for 1975-1976 drawn up by the Board of Investments. If, in the future, any of the industries should be stricken off the list, the landed cost of machinery, depreciation, procurement cost of raw materials and fund requirements for a project in the affected industry will increase.

Foreign Exchange Rate. The current rate is roughly ₱7.50 to $1. It is likely, however, that the rate may change in the future. The effect of this on the project will depend upon: the extent of the change; the dollar-earning potential of the project; the competition from imported articles; and the dollar payments for the liabilities, raw materials, machinery, foreign technicians, royalties, and foreign travel.

In the case of projects which are export-oriented, an assumption should be made also with respect to the possible rate of export tax.

Price Level Changes. The past price changes in the Philippines may be gleaned from the following general wholesale price index in Manila, with 1949 prices represented by 100:

	Index	% increase from prior year
1949	100	
1950	97	3%*
1951	109	12
1952	100	8*
1953	99	1*
1954	93	6*
1955	91	2*
1956	94	3
1957	98	4
1958	101	3
1959	103	2
1960	107	4
1961	112	5
1962	118	5
1963	129	9
1964	135	5
1965	138	2
1966	144	4
1967	148	3
1968	152	3
1969	154	1
1970	190	23
1971	220	16
1972	243	10
1973	302	24
1974	467	55
1975**	484	4

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* Decrease

** January to April only.

It can be noted from the above that the annual rate of increase in the past is roughly 10%. However, if another index were used, such as the retail price index, the resulting change might be different.

Future price level increases may be predicted by taking into account: past price changes, factors which caused the major price changes, government plans, and future general business conditions.

Care should be exercised in using the past price level changes as the basis in projecting future prices. For instance, the abnormal price increase from 1962 to 1963 may have been due mainly to the full decontrol program. During this period, the cost of a U.S. dollar almost doubled—from ₱2 to ₱3.90.

When the Philippine peso was allowed to float in 1970, the cost of a U.S. dollar jumped again—from ₱3.93 to ₱6.48. This caused the wholesale price index to increase 23% in 1970 and 16% in 1971.

In 1973 and 1974, the price of oil increased five-fold—from $1.99 per barrel before the Arab-Israeli war in late 1973, to more than $11 in late 1974. The price levels around the world automatically zoomed. The effect of this was felt in the Philippines in 1973 and 1974.

In financial projections for a short period, say, two years, the effect of price level changes on the viability of the project may not be so material. However, if the projections are for say, 10 years, the effect will be significant.

In preparing financial projections, some disregard the price level changes on the ground that increases in the cost of production will be offset by increases in the selling prices of the products. This stand is not valid in many cases, as the rate of increase in the production cost may not be the same as the rate of increase in the selling prices. This is especially true for projects which will meet stiff competition either from foreign or domestic sources.

Other Assumptions. In addition to the above assumptions, there are definitely others which have to be made. For instance, if the projected domestic sales is quite low in relation to the plant capacity, an assumption may be made as to the plan for the utilization of at least a part of the otherwise idle capacity. It may be assumed, for instance, that the project will also export. This, of course, should be supported by a study which will support the quantity to be exported, the export markets, and the FOB Manila export price.

3. SALES, SALES COLLECTIONS, AND FINISHED GOODS INVENTORIES

Sales. In many project studies, the annual sales volume is considered as equivalent to the daily rated capacity multiplied by 365. Thus, if the maximum gross production, or the plant capacity is three metric tons per eight-hour shift, or nine tons per 24 hours, the sales is considered as 3,285 tons a year. Only in very exceptional cases can this be considered as realistic since there are certain factors which tend to limit the sales potential.

The first thing to find out is the daily rated capacity according to the specifications of the machinery supplier. Depending upon the parctices and reputation of the supplier, the actual capacity may be about the same as, or may vary from, the claimed capacity. The following may also have a bearing on the production volume:

1. Nature of manufacturing process
2. Maintenance period
3. Factory technical problems
4. Labor strikes
5. Lack of raw materials
6. Power failures
7. Factory rejects and breakages.

In most chemical-process plants, such as oil refineries, the manufacturing operations have to be continuous—24 hours a day for many days in a row. On the other hand, in the case of many physical-process plants, such as cotton textile mills, the manufacturing operations are usually not continuous. The plants may be operated for only one or two shifts a day, for six days a week, holidays excluded. Thus, the regular working days will be only 302:

Days in a year			-	365
Less:				
Sundays	-	52		
Holidays	-	11	-	63
Working day			-	302

Almost all types of plants have to be shut down for varying periods of time, so that the machinery and equipment can be properly maintained. In a glass factory, for instance, the furnace has to be periodically relined.

During the first few years of operations, a lot of technical problems may arise. For instance, the raw materials in the locality may be found to possess some chemical or physical properties which will cause damage to some of the equipment. Or the need for additional equipment may be felt. Hence, the possible production for the first year may be much lower than the rated capacity even as adjusted for Sundays, holidays, and maintenance time.

Other factors which may tend to lower the production volume are labor strikes, interruptions in the supply of raw materials, and power failures. If the raw materials are to be imported, the supply may be disrupted due to pier strikes either in Manila or abroad. However, it is quite difficult to predict the effect of these factors on the level of production.

If the plant capacity as given by the machinery manufacturer is based on gross production, some adjustments should be made for the factory rejects and breakages which may be high during the first few months of operations. However, as the labor force becomes more efficient and as adjustments are made in the selection and mixing of the ingredients, control of the temperature, and operation of the machinery and equipment, the rate will tend to go down.

In order to illustrate the mechanics involved, the computation of the maximum attainable level of production for a hypothetical Caloocan Manufacturing Co. is given below:

	1979	1980	1981
Number of working days	302	302	302
Maintenance days—say two weeks or 12 working days	12	12	12
Production days	290	290	290
Interruptions due to technical problems—in days	24	12	6
Effective production days	266	278	284
Gross production per day—in tons	9	9	9
Gross production per year—in tons	2,394	2,502	2,556

	1979	1980	1981
Rate of acceptable production to gross production (1)	85%	90%	95%
Acceptable production per year—in tons	2,035	2,252	2,428

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(1) After rejects and breakages.

The above maximum attainable production levels may be compared with the 3,285 tons which is obtained by multiplying the daily capacity of 9 tons by 365 days.

The total production of the firm should be more than the projected sales volume, since finished products inventories have to be built up. These inventories represents the products stored in the company factory warehouses, and those in transit from the factory to the buyers,

The production and sales volumes are reconciled with the maximum attainable production levels as follows:

	In metric tons		
	1979	1980	1981
Sales as forecasted	600	1,200	1,800
Required inventory at end of year—2/12 of the sales (1)	100	200	300
Increase in inventory during the year	100	100	100
Required production—sales as forecast plus annual increase in inventory	700	1,300	1,900
Maximum attainable production as determined earlier	2,035	2,262	2,428

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(1) The inventory is assumed as equivalent to 2 months sales.

Sales Collections. The collections from the sales depend on the annual amount of the sales, and the expected collection period of the receivables. For the Caloocan Manufacturing Co., the collections from the sales may be computed as:

	Million pesos		
	1979	1980	1981
Sales at ₱1,000 per metric ton	₱ .6	₱1.2	₱1.8
Receivables at the end of the year—2/12 of Sales	.1	.2	.3
Increase in receivables during the year	.1	.1	.1
Collections—sales minus the increase in the receivables	.5	1.1	1.7

In the above illustration, it was assumed that the collection period is two months. Hence, the balance of the receivables at the end of each year is equivalent to 2/12 of the sales for the year. If the average collection period is two months, the prescribed terms of sales should be less than two months—maybe 45 days, so as to allow for delinquent accounts.

The reasonableness of the collection period for the project may be determined by considerng the collection period of other firms. The latter may be estimated through the use of the formula:

$$\text{No. of turnover per year} = \frac{\text{Credit sales}}{\text{Average balance of accounts receivable}}$$

$$\text{Collection period (in days)} = \frac{\text{365 (days per year)}}{\text{No. of turnovers per year}}$$

Finished Goods Inventory. The period required to sell the finished goods depends mainly on the marketing set-up for the project. On one hand, if the project manufactures exclusively for a sister firm and the latter purchases the production on a weekly basis, the inventory period will be equivalent to an average of half week's production. On the other hand, if the manufacturing project maintains sales outlets throughout the Philippines, the inventory period may be equivalent to more than two months' production.

The inventory period for the project may be compared with those of other firms. The latter may be estimated through the use of the formula:

$$\text{No. of turnovers per year} = \frac{\text{Cost of goods sold}}{\text{Average finished goods inventory}}$$

$$\text{Inventory period (in days)} = \frac{365 \text{ (days per year)}}{\text{No. of turnovers per year}}$$

4. COSTS AND EXPENSES

Each major cost or expense should be estimated individually for each of the years covered by the financial projections. This is necessary because the amount may change from year to year due to:

1. Price level changes
2. Setting up in the Philippines of related industries
3. Legal provisions
4. Nature of cost
5. Changes in volume of production
6. Management plans and policies.

The cost of almost all items are likely to increase due to the increasing price levels. However, some items are more sensitive than others to price changes. For instance, the cost of raw materials or supplies may fluctuate every week or every month, while the salary rates may increase every six months only.

The setting up of local factories which will manufacture the raw materials to be used by the project may cause the materials cost to go down. Thus, the raw materials cost of a project may decrease subsequently as the initially-imported materials are produced locally. However, if there will be only one local producer of the raw materials, and if that producer is able to work for the upward revision in the tariff rates, the raw materials cost may go up instead.

Some legal provisions work in such a way so as to change from time to time some of the expense items of a project. Thus, if the plant is going to be located in a province, the real estate taxes may increase after the fifth year of operations. The principal machinery will be subject to the tax only after the fifth year of operations. The cost of imported raw materials of a textile firm went up from 1966 to 1967, 1968 to 1969, 1969 to 1970, and 1970 to 1971, due to the gradual reduction in the tax exemption privileges granted by the Textile Industry Act (RA 4086).

Some costs or expenses may diminish due to their very nature. Thus, the interest expense may decline from year to year as the borrowings are gradually amortized. The compensation of top technical men or factory department managers will decrease after the first few years as the highly-paid foreign engineers are eventually replaced by the lower-paid Filipinos.

If the volume of production will be stepped up, the total cost of production will go up, although the cost per unit will decrease.

Management plans and policies may also cause the costs and expenses to vary in amount. Thus, although for income tax purposes the pre-operating expenses may be amortized over the entire life of the corporation, the amortization may be for a shorter period, say five years, for management purposes. Hence, after the fifth year, there will be no more amortization.

Classifications. The costs and expenses may be classified according to—

1. Nature—as raw material and personnel compensation
2. Function—as manufacturing and marketing
3. Time—as pre-operating and operating
4. Behavior in relation to changes in volume—as fixed and variable
5. Cash outlay—cash and non-cash.

The costs and expenses as discussed here are classified as to nature and are as follows:

1. Expenses related to fixed assets—depreciation, insurance, maintenance, and real estate taxes. Also discussed is the cost of fixed assets.
2. Personnel compensation—See also Vol. 1, Chapter IV, Part E.
3. Materials and supplies—See also Chapter I, Part F of this volume.
4. Electricity—See Chapter I, Part G of this volume.

5. Cost of borrowed money—See also Chapter III, Part E of this Volume.
6. Organization and pre-operating expenses.
7. Other costs and expenses excluding taxes.
8. Taxes—See Chapter II of this volume.

The fixed and variable expenses are covered in Part C of this Chapter.

Sources of Data. The manufacturing, marketing, administrative, and interest costs and expenses may be obtained from the technical, marketing, management, taxation, and financing studies, as well as directly from outside sources. The cost of raw materials may be obtained from the technical studies and materials suppliers, while the annual interest expense may be obtained from the financing studies, and financial institutions being tapped for financing.

Fixed Assets and Related Expenses. The fixed assets for a manufacturing project include the following:

1. Land, and land improvements such as roads
2. Buildings, and other structures such as storage tanks and piers
3. Machinery and plant equipment
4. Small tools, office equipment, and transportation equipment.

The acquisition or construction cost of the above items have to be estimated so as to help ascertain:

1. The total financing required for the project.
2. The expenses which are related to the fixed assets, such as depreciation.

Depreciation. All fixed assets, except land, are subject to depreciation. Depreciation refers to that portion of the cost of a fixed asset which should be considered as an expense for a particular year of normal operations. Before the annual amount of the depreciation may be ascertained, the useful economic life of the asset should be determined. In the case of the hypothetical Caloocan Manufacturing Company, the annual depreciation was computed as follows:

Cost of buildings	₱400,000
Cost of machinery	- 500,000
Cost of equipment	- 100,000
Total cost of fixed assets	- ₱1,000,000

Assuming that the life of all the above assets is 10 years, the annual depreciation will be ₱1,000,000 divided by 10, or ₱100,000.

In the case of buildings, the economic useful life may be obtained from architects, civil engineers, or building contractors. For machinery, the useful life may be furnished by the machinery suppliers, or by qualified engineers. If the useful life cannot be obtained from the above sources, reference may be made to the rule issued by the United States Treasury Department on July 11, 1962, which covers the allowable depreciation for U.S. income tax purposes. This rule superseded "Bulletin F" of the same department. The useful life of certain fixed assets as contained in the ruling are:

Land improvements	- 20 years
Office and factory buildings	- 45
Factory machinery and equipment for:	
Chemical industry	- 11
Textile industry	- 14
Manufacturing industry in general	- 12
Office furniture and equipment	- 10
Heavy general purpose trucks (unloaded weight of 13,000 pounds or more)	- 6
Light general purpose trucks	- 4
Taxi cars	- 3

Insurance. Premiums for insurance against fire, boiler explosion, and other risks should be provided for. The fixed assets which are normally insured are buildings and other structures, machinery, and equipment. In addition, inventories may also be covered. The annual premium may be approximated by multiplying the net book value of the asset (cost minus the accumulated depreciation) by the insurance rate.

The rates of fire insurance on buildings vary depending, among others, on:

1. Construction materials used
2. Type of building occupancy
3. Number of tenants
4. Exposure to risks.

A building made of timber has a higher premium rate than a concrete one. A copra warehouse has a higher rate than a rice warehouse. A retail store building with five tenants has a higher rate than one with only two tenants. A building in a commercial district has a higher rate than an isolated one.

Maintenance and Repairs. The cost of materials and extra labor required for maintenance and repairs can be roughly approximated by applying a certain percentage to the cost of the buildings and machinery. The rate may be estimated by a qualified engineer. The normal range should be from 1% to 3% a year for the first five years; the rate should be increased for the subsequent years.

Materials and Supplies. Materials and supplies include raw materials, packing supplies, manufacturing supplies, medical supplies, quality control materials, research and development supplies, waste disposal chemicals, office supplies, advertising and promotional supplies, and janitorial supplies.

The quantity of raw materials and packing supplies can be ascertained from the materials balance prepared during the engineering study. The unit costs may be obtained from the supplier's quotations. If the suppliers' quotations are not on a delivered basis, the cost of transportation up to the project site should be considered.

The estimates for the payments of the materials should consider:

1. The terms of payments for the purchases (as on cash or 30 days after delivery);
2. The amount of purchases, which should be based in turn, on the raw materials usage, and the desired level of materials inventory, or the materials inventory period. The inventory period is discussed below.

The payments for the raw materials of Caloocan Manufacturing Co., as shown in Exhibit 2, were computed as:

	Thousand Pesos		
	1979	1980	1981
Materials used per Exhibit 1	₱140	₱260	₱380
Inventories at end of year - 3/12 of materials used	35	65	95
Increase in inventory during the year	35	30	30
Materials purchases - materials used plus increase in inventory during the year	175	290	410

	Thousand Pesos		
	1979	1980	1981
Accounts payable at end of year 1/12 of materials purchases	15	24	34
Increase in payables during the year	15	9	10
Payments—materials purchases less increase in balance of payables	160	281	400

The above table is based on two assumptions:

1. That the inventories of raw materials shall be equivalent to three months' supply; and
2. That the term of the purchases shall be one month.

The raw materials inventory period depends on the time required to procure the raw materials, and the regularity of the supply. For instance, for imported raw materials the project should have about three months' supply of materials as it takes about this time for the materials to arrive. The materials inventory period for the project may be compared with that of other firms. The latter may be estimated through the use of the formula:

$$\text{Number of turnovers per year} = \frac{\text{Cost of annual raw materials used}}{\text{Average raw materials inventory}}$$

$$\text{Inventory period} = \frac{365 \text{ (days per year)}}{\text{No. of turnovers per year}}$$

Cost of Borrowed Money. Most business concerns use borrowed money. Borrowings may be long-term or short-term. Short-term borrowing may be in the form of loans or overdrafts.

The costs which are normally associated with borrowed money are:

1. Interest
2. Commitment fee
3. Philippine taxes as on income, if these have to be paid by the project in accordance with a foreign loan agreement
4. Expenses in connection with the negotiations, as travel,

preparation of required papers, and representation

5. Commissions on the sale of public issues.

The interest on long-term borrowings can be readily computed as the terms are usually worked out with the creditors before the preparation of the profitability estimates. On the other hand, the interest on short-term borrowings cannot be readily ascertained because the covering amount and duration are usually not arranged ahead of the profitability study. Before the interest on the short-term borrowing may be determined, it will be necessary to prepare a projected cash flow statement. The statement will show the required short-term financing. The prevailing interest rate may then be applied on the required short-term borrowing in order to estimate the interest expense.

Organization and Pre-Operating Expenses. Normally, before a business can start its regular operation, it has to incur some organizational and pre-operating expenses. Organization expenses for setting up the business organization consist of fees for the registration with the Securities and Exchange Commission, legal and financial advice regarding the form of business organization, documentary stamps on the initial issues of capital stock certificates, and accounting records.

Pre-operating expenses needed to put the business in an operating condition include expenses for:

1. The preparation of project studies;
2. Travel expenses for contacting the licensor and machinery supplier; administrative expenses;
3. Training abroad of Filipino engineers;
4. Plant trial runs;
5. Advertising campaigns to pre-sell the product; and
6. Interest.

The organization and pre-operating expenses may have to be amortized over the life of the corporation for income tax purposes. If the life of the corporation is 50 years and the project is expected to start operations beginning its sixth year of corporate life, then the organization and pre-operating expenses may be amortized for the remaining 45 years. However, for purposes of projected income statements, the expenses may be amortized over a much shorter period, say three, five or ten years.

Other Costs and Expenses. In addition to the foregoing costs, there are others which may be encountered, such as:

1. Cost of service of consulting engineers, lawyers, auditors, and advertising agencies;
2. Cost of transporting raw materials and finished goods;
3. Rentals of land, factory buildings, office buildings, warehouses, factory equipment, and office machines;
4. Royalty;
5. Domestic and foreign travel, representation and entertainment, donations, membership fees, subscription fees, and communication expenses.

The above expenses may be estimated by contacting reputable firms (as for cost of services) or through simple calculations with reference to the contracts (as for royalties).

The transportation of raw materials and finished goods may be handled either by the project or by contractors. In the first case, the transportation equipment, men, and supplies, should be provided for in the estimates. If the transportation is by contract, quotations should be obtained from the Philippine National Railways, trucking firms, or barging companies.

The *royalty* payments to the licensors may represent any one or a combination of:

1. Percentage of the gross sales
2. Percentage of the profit (the term profit has to be defined)
3. Certain amount per unit produced or sold
4. Fixed periodic amount.

B. Financial Evaluation

Before deciding on whether or not to launch an undertaking, the promoters and financiers should evaluate the results of the financial projections, particularly those which indicate the ability of the project to:

1. Operate profitably, withstand adversities, and generate cash, as measured by the:
    a. Profit break-even point—volume and selling price
    b. Cash break-even point—volume and selling price
    c. Income statement on a per unit basis
    d. Costs and profit as a % of sales
    e. Exposure to tariff changes

f. Exposure to foreign exchange fluctuations
g. Ability to borrow.

2. Generate returns on the investments of the financiers, as measured by the:

a. Cash payback period
b. Accounting rate of return on the stockholders' investment
c. Discounted-cash-flow rate of return on the investment.

3. Protect the creditors and service the debts, as measured by the:

a. Debt service break-even point sales volume.

The break-even point analyses are discussed in Part C of this chapter, while the tools mentioned in item 2 above are covered in Part D.

Financial analyses work do not stop with the derivation of the ratios, percentages, or amounts. Meaningful results may be obtained if these figures are compared with similar ones for existing firms, other projects, or with the requirements of the financial institutions. For instance, the projected cost of power per bag of cement for a project may be compared with corresponding figures for existing cement firms and other cement projects.

Per Unit Income Statement. The per unit income statement restates the various items in the projected income statement on a per unit basis. This is done by dividing the amounts in the income statement by the number of units expected to be sold or produced. This tool is applied to the income statement of the Caloocan Manufacturing Co. for 1981 (Exhibit 1) as follows:

		Per kilo of product to be sold
Sales		
Cost of sales:		₱1.00
Raw materials	₱0.20	
Direct labor	0.10	
Depreciation	0.05	
Others	0.10	0.45
Gross profit		0.55

		Per Kilo of Product to be Sold
Operating expenses:		
Salaries	₱0.07	
Commission	0.05	
Others	0.09	0.21
Operating profit		0.34
Interest expenses		0.03
Net profit before income tax		0.31
Provision for income tax		0.11
Net profit—final		₱0.20

The sales of ₱1.00 per kilo was derived by dividing the sales value of ₱1,800,000 by the sales volume of 1,800,000 kilos. The raw materials cost of ₱0.20 per kilo was obtained by dividing the total materials cost of ₱380,000 by the 1,900,000 units expected to be produced.

The amounts in the per unit income statement for a project as shown below may prove to be meaningful if compared with those of existing firms:

1. For cement projects—sales, cost of power, cost of paper bag, and depreciation, per bag;
2. For hotel projects—room revenues and depreciation per room; and
3. For shcool projects—tuition fees, salaries of professors, and cost of school administration, per student.

Costs and Profit as % of Sales. The various elements of costs and expenses, as well as the gross, operating, and net, profit, may be expressed as a percentage (%) of the sales. Thus, for the Caloocan Manufacturing Co. for 1981, the percentage will be:

Sales		100%
Cost of sales and expenses		
Raw materials	20%	
Direct labor	10	

Depreciation	5	
Other manufacturing cost	10	
Operating expenses	21	
Interest expenses	3	69
Net profit before income tax		31
Provision for income tax		11
Net profit—final		20%

The effects of the possible fluctuations in the sales cost of sales, and expenses, can be readily determined from the above statement. For instance:

1. If the sales volume (in units) can be maintained, the selling price per unit may be reduced by 30% (from ₱1.00 to ₱0.70) and still the project will not lose; and
2. If the other elements of costs will not change, an increase in the cost of raw materials by 100% (from 20% of sales to 40%), will not totally eliminate the net profit.

Exposure to Tariff Changes. Projects which are protected by high tariff duties may lose once the tariff rates are reduced. Assume that a project has the following projected income statement:

Sales—1,000 units at ₱130		₱130,000
Costs and expenses:		
Imported raw materials ($9,143 at ₱7 = $1)	₱64,000	
Others	51,000	115,000
Net profit before tax		₱15,000

The selling price per unit is pegged at ₱130, which is the landed cost of similar imported article:

CIF	₱ 80
50% tariff	40
Total	120
Advance sales tax—7% of 125% of ₱120	10
Landed cost	₱130

If the tariff rate is reduced to say 25%, the landed cost will be ₱109:

CIF	₱ 80
25% tariff	20
Total	100
Advance sales tax—7% of 120% of ₱100	9
Landed cost	₱109

The project will then be forced to decrease its selling price to ₱109. The profit of ₱15,000 will then be converted into a loss of ₱6,000:

Sales—1,000 units at ₱109		₱109,000
Costs and expenses:		
Raw materials	₱64,000	
Others	51,000	115,000
Net loss		₱ 6,000

Exposure to Foreign Exchange Fluctuations. Projects which are dependent on imported raw materials—as those in the textile, wheat flour, and galvanized iron sheets processing industries—are likely to lose if the cost of foreign exchange increases. In these industries, the cost of imported raw materials as a percentage of sales is very high—normally about 50%. Assume that all the materials to be used by a project are going to be imported and that the income statement shown earlier with a net profit of ₱15,000 is based on a peso-dollar rate of ₱7 = $1. If the rate will rise to say, ₱9 = $1, the project is expected to lose, even if the tariff on both finished goods and raw materials will remain:

Sales—1,000 units at ₱130		₱130,000
Costs and expenses:		
Imported raw materials—($9,143 at ₱9 = $1)	₱82,287	
Others	51,000	133,287
Net loss		₱ 3,287

The selling price, however, might be raised, if the project will compete with imported goods.

The other costs and expenses which may be affected by foreign exchange fluctuations are: interest on foreign loans, depreciation of imported machinery which have not yet been fully paid, royalties, and compensation of foreign technicians.

Capacity for Additional Borrowings. A delay in the starting date of operations, or a delay in the expansion of the market, may cause the project to overshoot its original cash budget. If at this time the project will not be able to raise additional financing, then it will be headed for trouble. Hence, the need right from the start to evaluate the project's subsequent borrowing capacity, which will depend on:

1. Availability of collaterals; and
2. Existence of sound debt-equity and current ratios at the time when additional borrowings have to be incurred.

C. Break-Even Point Analyses

The break-even point technique is used in the analyses of the profit, cash generation, and debt service ability.

1. *Profit.* The purpose of the break-even point (BEP) analyses is to find out the level of sales volume (quantity), or the selling price per unit, at which a project will just break even (no gain or loss). If the projected sales volume or selling price is higher than the BEP, then the project is expected to gain.

2. *Cash.* The BEP may also be used to establish the level of sales volume or the selling price per unit at which the project will generate just enough cash for the operations. If the projected sales volume or selling price is higher than the BEP, then the project is expected to generate from the operations some funds which may be used to pay off the obligations.

The cash BEP considers only the cash items. It excludes the non-cash costs and expenses, or the items which do not involve cash outlay in the year to which they pertain. This is composed mainly of depreciation, depletion, and amortization of pre-operating expenses.

For both the profit and cash analyses, the BEP sales volume and selling price may be compared as:

	Sales volume	Selling price
BEP sales volume	To be determined	Given or assumed
BEP selling price	Given or assumed	To be determined

The break-even point may be determined through the application of a formula, or through the use of a chart.

3. *Debt Service.* Another application of the BEP principle is to determine the level of sales volume at which the project will generate just enough cash for its operations and for servicing its loans. This application is quite significant to the financial institutions.

Classification of Costs and Expenses. The first step to take in the determineation of the BEP is to classify all the costs and expenses—cost of sales, operating expenses, interest, and provision for income tax into the following:

1. Profit-dependent
2. Not profit-dependent
    a. Fixed
    b. Variable

At break-even point, there will be no net profit. Hence, the expenses which are dependent on the net profit—such as provision for income tax, and profit-sharing bonus—should be disregarded.

The fixed costs and expenses are those whose amounts are fixed, or do not vary, irrespective of the level of production or sales. Illustrations of these are depreciation, basic salaries of corporate officers, and interest on long-term loans which are incurred in order to finance the fixed assets. The amounts of these items are fixed up to a certain level only. For instance, if the production volume exceeds the proposed plant rated capacity, the plant has to be expanded, and additional fixed costs have to be incurred.

The variable costs and expenses are those whose amounts decrease (or increase) when the production or sales volume decreases (or increase). Illustrations of these are the compensation of machine operators, manufacturers' sales taxes, and interest on short-term loans which are incurred to finance the accounts receivables and inventories.

The costs and expenses of Caloocan Manufacturing Company (CMC) for 1981 (Exhibit 1) are classified as follows:

	Thousand pesos		
	Total	Fixed	Variable
Raw materials	₱ 380		₱ 380
Direct labor	190		190
Depreciation	100	₱ 100	
Others	185[a]	92	93
Total cost of goods manufactured	855	192	663
Increase in finished goods inventory	(40)[b]	(9)	(31)
Cost of sales	815	183	632
Administrative and sales salaries	120	120	
Sales commissions	90		90
Representation	30	30	
Other operating expenses	145[a]	73	72
Amortization of pre-operating expenses	2	2	
Interest	50	50	
Total	₱1,252	₱ 458	₱ 794

(a) Assumed to be 50% fixed and 50% variable in the absence of information.

(b) Apportioned to fixed and to variable costs based on the apportionment of the cost of goods manufactured.

1. PROFIT ANALYSES

The sales volume or the unit selling price at chich the project will just break-even may be established. The BEP sales volume may assume either only 1, or various selling prices.

BEP Sales Volume at 1 Unit Selling Price. The profit BEP sales volume may be determined through the use of the formula:

$$\text{Profit BEPSV} = \frac{\text{TFC}}{\text{USP} - \text{UVC}}$$

Where:

BEPSV—Break-even point sales volume
TFC—Total fixed costs = ₱458,000 for CMC per computations above

USP—Unit selling price = ₱1
UVC—Unit variable cost = ₱794,000 per computations above divided by 1,800,000 or ₱0.4411

The profit BEP sales volume for CMC for 1981 may be determined as follows:

$$\textit{Profit BEPSV} = \frac{₱458{,}000}{₱1 - ₱0.4411} = \frac{₱458{,}000}{₱0.5589} = 891{,}460 \text{ kilos}$$

Shown in Exhibit 5 is the corresponding chart.

At 819,450 units, the summary income statement is:

Sales—819,460 kilos at ₱1	=	₱819,460
Costs and expenses:		
Fixed	=	₱458,000
Variable—819,460 at ₱0.4411	=	361,460
Total		819,460
Net profit		₱ 0

If the volume will be lower than 819,460 kilos, the project will lose. Thus,

If the volume is	The loss will be about
700,000	₱67,000
600,000	123,000
500,000	179,000

If the sales volume is higher than 819,460, the firm will gain.

For analysis work, the BEP sales volume should be compared with the projected sales volume, and the maximum attainable production or plant capacity. Assume, for instance, that the pertinent data are:

	In Metric Tons		
Set	BEP sales volume	Projected sales volume	Plant capacity
1	819	2,300	2,428
2	819	850	2,428
3	2,200	2,300	2,428

In *Set 1*, the BEP is much lower than the projected sales volume and the plant capacity. This means that the project is a *very profitable* one and will be likely to withstand adverse factors as reductions in the tariff protection.

In *Set 2*, the BEP is just below the projected sales volume. Hence, there is a danger that the project *may actually lose*. However, since both the BEP and the projected sales volume are much lower than the plant capacity, the project has a high profit potential—if the sales volume can be raised. The project here may also turn out to have an *over-capacity*.

In Set 3, the BEP is about the same as the projected sales volume and the plant capacity. The project is *not profitable* and should not be implemented.

BEP Sales Volume at Various Unit Selling Prices. The selling price, like the sales volume, can hardly be predicted quite accurately. Hence, estimates may be based on a range of possible unit selling prices. For the Caloocan Manufacturing Co., for instance, the BEP sales volume may be determined based at an assumed selling price of not only ₱1 but also of other possible prices as ₱0.63, ₱0.70, ₱0.80, and ₱1.20. Thus:

If the selling price is	The BEP will be	
₱0.63	$\frac{\text{₱}458{,}000}{\text{₱}0.1889}$ =	2,424,000
₱0.70	$\frac{\text{₱}458{,}000}{\text{₱}0.2589}$ =	1,769,000

If the Selling Price is	The BEP will be	
₱0.80	$\frac{\text{₱}458{,}000}{\text{₱}0.3589} =$	1,276,000
₱1.00	$\frac{\text{₱}458{,}000}{\text{₱}0.5589} =$	819,000
₱1.20	$\frac{\text{₱}458{,}000}{\text{₱}0.7589} =$	604,000

The above BEP sales volumes are only rough estimates as some expenses such as manufacturers' sales tax and sales commission may change if the selling price per unit is other than ₱1.00. It may be noted that, as the unit selling price goes up, the level of sales volume which is required to break even goes down.

Shown in Exhibit 6 is the covering BEP sales volume chart.

BEP Selling Price. If the sales volume can be reasonably predicted while the unit selling price cannot be reliably estimated, the BEP selling price (BEPSP) should be computed. The formula, and its application to the CMC for 1981, with an assumed sales volume of 1,800,000 units, are:

$$\text{BEPSP} = \frac{\text{FC} + \text{VC}}{\text{No. of Units}} = \frac{\text{₱}458{,}000 + \text{₱}794{,}000}{1{,}800{,}000}$$

$$= \text{₱}0.696$$

The resulting income statement is:

Sales – 1,800,000 at ₱0.696		₱ 1,252,000
Costs and expenses:		
Fixed	₱458,000	
Variable	794,000	₱1,252,000
Net profit		₱ 0

2. CASH ANALYSES

The level of sales volume at which the project will just be self-sufficient in cash, that is, the cash proceeds from the sales will just be enough to pay for the cash costs and expenses, may be determined by using a formula, or a chart similar to that described above. If only 1 unit selling price is assumed, the formula is:

$$\text{Cash BEPSV} = \frac{\text{TCFC}}{\text{USP} - \text{UCVC}}$$

Where:

TCFC = Total cash fixed costs = ₱356,000 for CMC
USP = Unit selling price = ₱1
UCVC = Unit cash variable cost = ₱794,000 divided by 1,800,000 or ₱0.4411

The total cash fixed costs exclude the depreciation and amortization of pre-operating expenses as these items do not involve cash outlays after the fixed assets and pre-operating expenses have been paid for. The total cash fixed costs for the Caloocan Manufacturing Company (CMC), therefore, will be:

Total fixed costs as computed earlier	=	₱458,000
Less depreciation and amortization of pre-operating expenses		102,000
Total cash fixed costs		₱356,000

The unit cash variable costs will be the same as the unit variable costs as all the variable costs involve cash outlay. The provision for income tax and any profit-dependent costs and expenses will be disregarded here because at cash BEPSV there will be actually a net loss.

The cash BEPSV for the CMC for 1981 is computed as:

$$= \frac{₱356.000}{₱1 - ₱0.4411}$$

$$= \frac{₱356,000}{₱0.5589}$$

$$= 636,965 \text{ kilos}$$

Shown in Exhibit 7 is the cash BEPSV chart. It may be noticed therein that the BEP is at 636,965 kilos. At 636,965 kilos, the summary cash income statement will be:

Sales—636,965 kilos at ₱1	₱636,965
Cash costs and expenses:	
Fixed—as shown above	356,000
Variable—636,965 at ₱0.4411	280,965
Total	636,965
Cash generation from operations	₱ 0

With the above sales volume, the cash proceeds from the sales will be just enough to pay for all the expenses requiring cash—raw materials, labor, administrative and sales salaries, commissions, representation, interest and others. No part of the sales proceeds is available for the payment of the loan principal.

If the sales is higher than 636,965 kilos, the project will be able to increase its cash balance, or pay off part of its obligations. If the sales will be lower than 636,965 kilos, the project will have to decrease its cash balance, or incur new debts to finance its operations. In other words, the project will not be self-sufficient in cash.

The cash BEPSV concept assumes that there will be no substantial changes in the levels of accounts receivables, inventories, accounts payables, taxes payable, and accrued or prepaid expenses. Due to this limitation, the cash BEPSV may be applied only to the year when the operations are already fairly stabilized. It is normally inadvisable to use the technique in the first year of a project's operations since at this time production and sales volume are going up; and hence, the balances of the receivables, inventories, and payables are building up.

3. DEBT SERVICE ANALYSES

Lending institutions may be interested not only in the profit and the cash BEP sales volume and unit selling price, but also in the level of sales volume which will be just enough to service the debt.

For the CMC, the debt service sales volume for 1981 may be estimated from Exhibit 8, which is actually a combination of Exhibit 5 and 7. As may be seen in Exhibit 8, if the sales volume is 1,600,000 kilos, total cash generation from the normal operations is about ₱400,000. Since the amount required to amortize the debt is ₱400,000, it may be said that the debt service sales volume is 1,600,000 kilos.

At 1,600,000 kilos, the summary income statement will be:

Sales—1,600,000 kilos at ₱1		₱1,600,000
Costs and expenses:		
Total fixed costs		458,000
Variable—1,600,000 kilos at ₱0.4411		706,000
Total		1,164,000
Net profit before income tax		436,000
Income tax:		
₱100,000 at 25%	— ₱25,000	
₱336,000 at 35%	— 118,000	143,000
Net profit		₱ 293,000

The corresponding cash flow statement will be:

Collections from sales	₱1,600,000
Cash costs and expenses:	
Cash fixed costs	356,000
Cash variable costs	706,000
Income tax	143,000
Total	1,205,000
Available for debt service	₱ 395,000

The actual amount for debt service is ₱400,000.

4. APPLICATION OF BREAK-EVEN POINT ANALYSES

The BEP figures for the Caloocan Manufacturing Co. (CMC) for

1981 as computed above are presented below, together with other related data:

Profit BEP:

Assumed selling price per kilo	BEPSV
₱0.63	2,400,000 kilos
0.70	1,800,000 "
0.80	1,280,000 "
1.00	820,000 "
1.20	600,000 "

Cash BEP: At ₱1.00 per kilo = 640,000 kilos

Debt service sales volume: At ₱1.00 per kilo = 1,600,000 kilos

Projected sales volume = 1,800,000 kilos

Plant rated capacity = 2,400,000 kilos

The following are the findings based on the above data:

1. At ₱1.00 per kilo, the profit BEP for the firm—820,000—is quite low as compared with the projected 1,800,000 sales, and the 2,400,000 rated capacity. Furthermore, if the 1,800,000 target is going to be attained, a ₱0.30 cut from the projected selling price of ₱1.00 per unit will not cause the firm to lose. It is quite likely, therefore, that the firm will gain in 1981. It is also a reasonable prediction that the firm will generate enough cash to pay its operating costs and expenses.

2. However, some doubts should be entertained regarding the ability of the firm to generate extra cash which will be used to pay the ₱400,000 loan due in 1981. The required sales volume to meet this amortization is 1,600,000 kilos, which is only slightly lower than the 1,800,000 kilos projected sales. Should the sales estimate by off by say 15%, the firm will not be able to pay the whole of ₱400,000 loan amortization.

3. The firm has a profit potential. For instance, if it operates at the 2,400,000 rated capacity and sell the entire production, the expected results are:

Selling price	Net profit before income tax	Net profit after tax	
		Amount	% of sales
₱1.20	₱1,363,000	₱896,000	31%
1.00	883,000	584,000	24%
.80	403,000	272,000	14%

The BEP computations for the CMC were made for 1981 only. Computation for the other years may have to be made in order that the prospects of the firm may be better evaluated.

5. BEP ANALYSES FOR MULTIPLE PRODUCT LINE PROJECTS

BEP Sales volume. The break-even point analyses may be applied not only to a single product line project, like the Caloocan Manufacturing Company, but also to one with multiple products. Assume, for instance, that the projected income statement for a project, say the Quezon Co., is as follows:

Sales—	
Product A—1,000 units at ₱500	₱ 500,000
Product B—9,000 units at ₱100	900,000
Product C—3,000 units at ₱200	600,000
Total Sales	2,000,000
Costs and expenses—	
Fixed	800,000
Variable—20% of sales based on the above selling prices	400,000
Total costs and expenses	1,200,000
Net profit before income tax	₱ 800,000

The profit BEP sales volume may be determined as follows:

$$\text{BEPSV} = \frac{\text{Total fixed costs}}{\text{Sales} - \text{Total variable costs}} \times \text{Sales}$$

$$= \frac{\text{₱}800{,}000}{\text{₱}2{,}000{,}000 - \text{₱}400{,}000} \times \text{₱}2{,}000{,}000$$

$$= \frac{\text{₱}800{,}000}{\text{₱}1{,}600{,}000} = 50\% \text{ of ₱}2{,}000{,}000$$

$$= \text{₱}1{,}000{,}000$$

The covering chart is shown in Exhibit 9.

At the ₱1,000,000 sales level, the income statement will be:

Sales		₱1,000,000
Less costs and expenses:		
Fixed	₱800,000	
Variable—30% of ₱1,000,000	200,000	1,000,000
Net profit		₱

The ₱1,000,000 BEP sales level may be broken down into the following specific products:

Product A—500 units at ₱500	₱ 250,000
Product B—4,500 units at ₱100	450,000
Product C—1,500 units at ₱200	300,000
Total	₱1,000,000

The basic limitation in the BEP sales level concept for a multiple product line project is that it assumes that the product mix will be maintained.

BEP Selling Price. The BEP selling price for the Quezon Co. may be ascertained as follows, assuming that the sales quantities for Products A, B and C are 1,000, 9,000, and 3,000 units, respectively.

$$\text{BEPSP} = \frac{\text{Fixed cost + Variable costs}}{\text{Sales}} \times \text{Unit selling price}$$

$$= \frac{₱800{,}000 + ₱400{,}000}{₱2{,}000{,}000} \times \text{Unit selling price}$$

= 60% of unit selling price

= Product A = 60% of ₱500 = ₱300

Product B = 60% of ₱100 = 60

Product C = 60% of ₱200 = 120

At BEP selling price, the income statement will be:

Sales—	
Product A—1,000 units at ₱300	₱ 300,000
Product B—9,000 units at ₱ 60	540,000
Product C—3,000 units at ₱120	360,000
Total sales	1,200,000
Costs and expenses—	
Fixed	800,000
Variable	400,000
Total costs and expenses	1,200,000
Net profit	₱ 0

The above selling prices are only rough estimates, as the variable cost will tend to be lower than ₱400,000. Some expenses, such as the manufacturers' sales tax, may go down due to the decrease in the sales values. Another limitation in the BEP selling price concept for a multiple product line project is that it assumes that the unit selling prices for the various products will be reduced proportionately.

D. Return on the Investment Analyses

In any business undertaking, the investment decision will be based on two major points: the amount and timing of the required investment; and the amount, timing and probability of the return on the investment.

There are three basic tools which correlate the investment with the return:

1. The cash payback or cash payoff period method;
2. The accounting rate of return on the investment method; and
3. The discounted cash flow rate of return (DCFRR), or present value method.

In order that the above tools may be apllied to the Caloocan Manufacturing Co. (CMC), the projections for 1979-1981 as shown in Exhibit 1 to 4 are first extended to 1982-1988 in Exhibits 10 and 11.

Based on the projections, the stockholders are required to invest the following amounts:

End of (1)	Amount
1977	₱400,000
1978	300,000
1979	150,000
1980	100,000
Total	₱950,000

---

(1) In the projected cash flow statement in Exhibits 2 and 3, the investments are shown as of the beginning of the following year.

The projected accounting net profit and cash dividends as shown in the accompanying projections are:

	Thousand pesos	
End of	Net profit	Cash dividend
1979	12 (a)	-
1980	171	-
1981	366	-
1982	389	400
1983	395	497

End of	Thousand pesos net profit	Thousand pesos Cash dividend
1984	395	497
1985	395	497
1986	395	497
1987	395	497
1988	215 (b)	1,169 (c)
Total	3,104	4,054

(a) Loss

(b) After ₱180,000 loss in final liquidation representing ₱80,000 unamortized balance of pre-operating expenses and ₱100,000 liquidating expenses.

(c) Includes ₱672,000 from the sale of assets as of end of project life:

Gross proceeds from—		
Cash	₱161	
Accounts receivable*	300	
Raw materials inventory*	95	
Finished goods inventory*	150	
Land*	100	₱806
Less payments		
Accounts payable	34	
Expenses in liquidation	100	134
Net proceeds		₱672

---

* Assume can be sold at cost.

The investment and the net profit are reconciled with the cash dividends as follows:

Total investment	₱ 950,000
Net profit	3,104,000
Total	₱4,054,000

Cash dividend	
Regular (out of profit)	₱3,104,000
Liquidating (out of capital stock)	950,000
Total	₱4,054,000

1. CASH PAYBACK METHOD

As an appraisal tool of the common stockholders, the cash payback method compares: (1) the cash and other types of assets which the stockholders will invest; with (2) the cash and other types of assets which they will get back in the form of regular and liquidating dividends. The faster the investment can be recovered, or the shorter the payback period, the better is the project because:

1. The investment as recovered can be reinvested in other projects; and
2. The probability of loss in the investment is minimized.

The basic limitation of this method is that it totally disregards the dividends *after* th payback period.

Application in the Caloocan Manufacturing Co. The total investment required from 1977 to 1979 is ₱950,000. The first dividend of ₱400,000, which will be in 1982, will not be enough to fully recoup the capital. However, by the end of 1983 and 1984, with the additional dividends of ₱994,000 thereby bringing the total to ₱1,394,000, the capital is considered to have been fully recovered.

The payback period for the CMC project is therefore estimated as seven years—from 1977 to 1984.

2. ACCOUNTING RATE OF RETURN

The accounting rate of return from the viewpoint of the common stockholders compares the investment with the annual net profit as shown in the projected income statement, or with the average profit for the entire life of the project. The higher the rate of return, the more profitable is the project. The basic limitation of this approach is that it totally disregards the time element.

Application in the Caloocan Manufacturing Co. If the financial projections cover only the first few years of operations, the rate of return is determined on an annual basis, thus:

	Net profit for the year	Capital, beginning of year	Profit as % of capital
1979	(₱12,000)	₱400,000	
1980	171,000	700,000	24%
1981	366,000	850,000	43
1982	389,000	950,000	41

If the net profit for the entire life of the project can be estimated, the rate of return may be based on the average annual profit:

Total net profit, 1979-1988, including the ₱90,000 loss in final liquidation	₱3,104,000
Number of years in operation	10 years
Average annual profit	₱310,400
Average annual net profit as a % of the ₱950,000	33%

3. DISCOUNTED CASH FLOW RATE OF RETURN (DCFRR)

As a financial evaluation technique for the use of the common stockholders, this method compares the capital to be invested with the dividends to be received. The time element is considered. The higher the rate of return percentage, the more profitable is the project.

Methodically, this method tries to find out a certain rate of return or interest. The rate should be such that, if used in dicsounting the dividends to the date when the investments are to be made, the discounted or present value of the dividends will equal the investments. This method uses a table on compound interest.

The DCFRR principle is applied to Projects A, B, and C.

Project A. Assume that the selected data are:

1. Investment as of January 1, 1980	₱9,090
2. Regular and liquidating dividend as of December 31, 1980	₱10,000
3. Life of the project	1 year

The DCF rate of return may be determined through a trial-and-error method. However, the number of trials may be minimized as one gains a working knowledge of the principle.

The ₱10,000 dividend may be discounted to January 1980, by using say 5%:

Dividend on December 31, 1980 Present value factor for 1 period at 5% (obtained from a table on present value of 1)	₱10,00 X .952
Discounted value as of January 1, 1980	₱9,520

At 5%, the discounted value of the dividend is higher than the ₱9,090 capital. Hence, 5% is not the correct DCF rate of return. Another interest rate should be tried. The new rate should be higher than 5% so that the present value factor will be lower than .952. A 20% rate may be tried.

Dividend on December 31, 1980	₱10,000
Present value for 1 period at 20%	X .833
Discounted value as of January 1, 1980	₱ 8,330

The discounted value of the dividend at 20% is lower than the ₱9,090 capital. Hence, 20% is not the DCF rate. The rate should be between 5% and 20%, since the ₱9,090 capital is between ₱9,520 and ₱8,330. A 10% rate may be tried:

Dividend on December 31, 1980	₱10,000
Present value factor for 1 period at 10%	X .909
Discounted value as of January 1, 1980	₱9,090

Project B. Assume that the data are:

1. Investment in January 1981	₱1,527
2. Regular and liquidating dividends:	
December 31, 1981	₱1,000
December 31, 1982	1,000
3. Life of the project	2 years

A 20% rate may be tried:

Date of dividend	Amount of dividend	Present value factor for 1 at 20%	Discounted value as of Jan. 1. 1981
Dec. 31, 1981	₱1,000	.833	₱ 833
Dec. 31, 1982	1,000	.694	694
	Total		₱1,527

Since the discounted value of the dividends at 20% matches the capital, 20% is the DCF rate.

Project C. Assume that the data are:

1. Investments:
   December 31, 1980 ₱1,055
   December 31, 1981 1,100
2. Dividends:
   December 31, 1983 ₱1,000
   December 31, 1984 1,000
   December 31, 1985 1,000

A 10% rate may be tried:

Date	Amount	Present value factor for 1 at 10%	Value as of Dec. 31, 1980
Investments:			
Dec. 31, 1980	₱1,055	1.000	₱1,055
Dec. 31, 1981	1,100	.909	1,000
Total			₱2,055
Dividends:			
Dec. 31, 1983	₱1,000	.751	₱ 751
Dec. 31, 1984	1,000	.683	683
Dec. 31, 1985	1,000	.621	621
Total			₱2,055

Since the discounted values of the investments and of the dividends are the same at 10%, 10% is the DCF rate of return.

Reference Date. In the above illustrations, the investments and dividends were compared as of the date when the initial investment is made. Actually, any date may be used. For Project C, for instance, December 31, 1985 may also be used as the reference date:

Date	Amount	Factors for the amount of 1 at 10%	Value as of Dec. 31, 1985
Investments:			
Dec. 31, 1980	₱1,055	1.610	₱1,699
Dec. 31, 1981	1,100	1.464	1,610
Total			₱3,309
Dividends:			
Dec. 31, 1983	₱1,000	1.210	₱1,210
Dec. 31, 1984	1,000	1.100	1,100
Dec. 31, 1985	1,000	1.000	1,000
Total			₱3,310

Concept of the DCF Rate of Return. The DCF rate of return refers to the profit which a stockholder may expect on his investment and which may be ultimately received as a dividend. The rate of return percentage is applied on the unrecovered original investment in the project plus the accumulated profit. This concept is illustrated, using the data for Project C:

Year	Balance, beginning of the year (a)	Add 10% profit for the year	Less Dividends
1981	₱1,055	₱106	₱
1982	2,261(b)	226	-
1983	2,487	249	1,000
1984	1,736	174	1,000
1985	910	90	1,000
1986	0		

(a) Same as balance, end of the prior year.
(b) ₱1,055 + ₱106 + ₱1,100 investment for 1982.

Life of the Project. Before the DCF rate of return may be established, the life of the project has to be estimated by referring to the life of the machinery, buildings, or other significant assets. For a machinery-intensive factory which purchases its raw materials, the life of the project may be based on the life of the major units of machinery. For a hotel, apartment, or office building, the life of the building will be the determining factor. For a coconut plantation, the life of the coconut trees will be the deciding factor. For a mine, the life of the project may be pegged to the extent of the commercial deposits. For all these four types of projects, the corporate life is normally disregarded.

The market value of the land as of the end of the life of the project may be estimated, and considered as additional dividend in the last year of operations.

Application in the Caloocan Manufacturing Co. Before the rate may be determined, the following data have to be obtained first from the financial projections:

Investments:	
1977	₱ 400,000
1978	300,000
1979	150,000
1980	100,000
Total	₱950,000
Dividends:	
1982	₱ 400,000
1983	497,000
1984	497,000
1985	497,000
1986	497,000
1987	497,000
1988	1,169,000
Total	₱4,054,000

The DCF rate of return may be determined on a trial-and-error method. Thus, 25% is tried out, with the following results:

Year*	End of year	Unadjusted amount (thousand pesos)	Factor for amount of 1 at 22%	Time-adjusted amount as of Dec. 31, 1988 (thousand pesos)
	Investments:			
0	1977	400	1.00	400
1	1978	300	.82	246
2	1979	150	.67	101
3	1980	100	.55	55
	Total	950		802
	Dividends:			
5	1982	400	.37	148
6	1983	497	.30	149
7	1984	497	.25	124
8	1985	497	.20	99
9	1986	497	.17	84
10	1987	497	.14	70
11	1988	1,169	.11	131
	Total	4,054		805

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* Year or period for purposes of using a table on compound interest.

At 22%, the time-adjusted values of the dividends is slightly higher than those of the investments. Hence, the DCF rate of return should be slightly higher than 22%.

4. VIEWPOINT OF ALL FINANCIERS

The accounting and DCF rates of return discussed above are from the viewpoint of stockholders only. However, the project lenders may be better able to gauge the over-all profitability of a project if they ascertain the rate of return from the viewpoint of all the long- and medium-term financiers—stockholders and lenders. This is because the rate of return for the stockholders only is already affected by the financing mix.

Accounting Rate of Return. From the viewpoint of all financiers, the accounting rate of return compares the investments to be made by the stockholders and lenders with the net profit and interest.

If the rate is going to be determined on an annual basis, the rates for the Caloocan Manufacturing Co. will be:

Year	For the year		
	Net profit	Interest	Total
1979	(₱12,000)	₱50,000	₱ 38,000
1980	171,000	50,000	221,000
1981	366,000	50,000	416,000
1982	389,000	10,000	399,000

Year	Beginning of the year		
	Capital	Loans	investments
1979	₱400,000	₱500,000	₱ 900,000
1980	700,000	500,000	1,200,000
1981	850,000	500,000	1,350,000
1982	950,000	100,000	1,050,000

Year	Net profit and interest	Capital and loan	Profit and interest as % of capital and loans
1979	₱ 38,000	₱ 900,000	4%
1980	221,000	1,200,000	18
1981	416,000	1,350,000	31
1982	399,000	1,050,000	38

The rates of returns from the viewpoint of stockholders are much higher (24% to 43% for 1980-1982, compared with 18%-38% as shown in above table), since the interest on the bank loan is 10% only.

DCFRR. The DCFRR from the viewpoint of all financiers is obtained by comparing the investments to be made by stockholders and lenders, with the financial benefits to be derived by them. The benefits are in the form of regular and liquidating dividends, interests, and amortizations on the loan principal. For the Caloocan

Manufacturing Co., the investment and return figures to be compared are:

		Thousand pesos		
Investments	End of	Stockholders	Banks	Total
	1977	₱ 400		₱ 400
	1978	300	₱ 500	800
	1979	150		150
	1980	100		100
	Total	₱950	₱ 500	₱1,450
Returns	1979		₱ 50	₱ 50
	1980		50	50
	1981		450*	450
	1982	₱400	110@	510
	1983	497		497
	1984	497		497
	1985	497		497
	1986	497		497
	1987	497		497
	1986	1,169		1,169
	Total	₱4,054	₱ 660	₱4,714

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* Interest of ₱50,000 and principal amortization of ₱400,000.
@ Interest of ₱10,000 and principal amortization of ₱100,000.

Exhibit 1

CALOOCAN MANUFACTURING CO.
PROJECTED INCOME STATEMENT
1979-1981

In Thousand Kilos	1979	1980	1981
Units to be sold	600	1,200	1,800
Build-up in finished goods inventory	100	100	100
Total to be produced	700	1,300	1,900
In Thousand Pesos			
Sales at ₱1 per kilo	₱ 600	₱1,200	₱1,800
Cost of sales—			
Raw materials	140	260	380
Direct labor	70	130	190
Depreciation	100	100	100
Others	110	160	185
Total	420	650	855
Increase in cost of ending finished goods inventory—			
1979—1/7 of ₱420	60		
1980—1/13 of ₱650		50	
1981—1/19 of ₱855			40
Cost of goods sold	360	600	815
Gross profit	240	600	985
Operating expenses—			
Salaries	80	100	120
Commission	30	60	90
Representation	30	30	30
Others	60	110	145

	1979	1980	1981
Total before amortization of pre-operating expenses	200	300	385
Add amortization of pre-operating expenses	2	2	2
Total	202	302	387
Operating profit	38	298	598
Interest expenses (10% of balance of bank loan)	50	50	50
Net profit (loss) before income tax	(12)	248	548
Provision for income tax	—	77	182
Net profit (loss)	(12)	₱ 171	₱ 366

Exhibit 2

CALOOCAN MANUFACTURING CO.
PROJECTED CASH FLOW STATEMENT (FORM A)
1978-1981
(In Thousand Pesos)

	1978	1979	1980	1981
Cash Receipts				
Stockholders	₱400	₱300	₱150	₱ 100
Bank loans	500	-		-
Sales	-	500	1,100	1,700
Total	₱900	₱800	₱1,250	₱1,800
Cash Disbursements				
Pre-operating expenses	100	-	-	-
Land	100	-	-	-
Buildings	400	-	-	-
Machinery	100	200	200	-
Equipment	100	-	-	-
Purchase of raw materials	-	160	281	7 400
Direct labor (Exh. 1)	-	70	130	190
Other manufacturing expenses (Exh. 1)	-	110	160	185
Operating expenses (Exh. 1)	-	200	300	385
Repayment of bank loan	-	-	-	400
Interest on bank loan	-	50	50	50
Income tax	-	-	77	182
Total	₱800	₱790	₱1,198	₱1,792
Increase in cash balance during the year	100	10	52	8
Cash balance, beginning of year	-	100	110	162
Cash balance, end of year	₱100	₱110	₱ 162	₱ 170

Exhibit 3

CALOOCAN MANUFACTURING CO.
PROJECTED CASH FLOW STATEMENT (FORM B)
1978-1981
(In Thousand Pesos)

	1978	1979	1980	1981
Cash Receipts				
Net profit (loss) after income tax	₱ -	(₱ 12)	₱171	₱366
Add back: Depreciation		100	100	100
Amortization of pre-operating expenses		2	2	2
Subtotal		90	273	468
Increase in blance of accounts payable		15	9	10
Stockholders	400	300	150	100
Bank loans	500			
Total	₱900	₱405	₱432	₱578
Cash Disbursements				
Increase in balance of accounts receivables	₱	₱100	₱100	₱100
Increase in balance of inventories:				
Raw materials		35	30	30
Finished goods		60	50	40
Pre-operating expenses	100			
Building	400			
Machinery	200	200	200	
Land	100			
Repayment of bank loan				400
Total	₱800	₱395	₱380	₱570
Increase in cash balance during the year	₱100	₱ 10	₱ 52	₱ 8
Cash balance, beginning of year	-	100	110	162
Cash balance, end of year	₱100	₱110	₱162	₱170

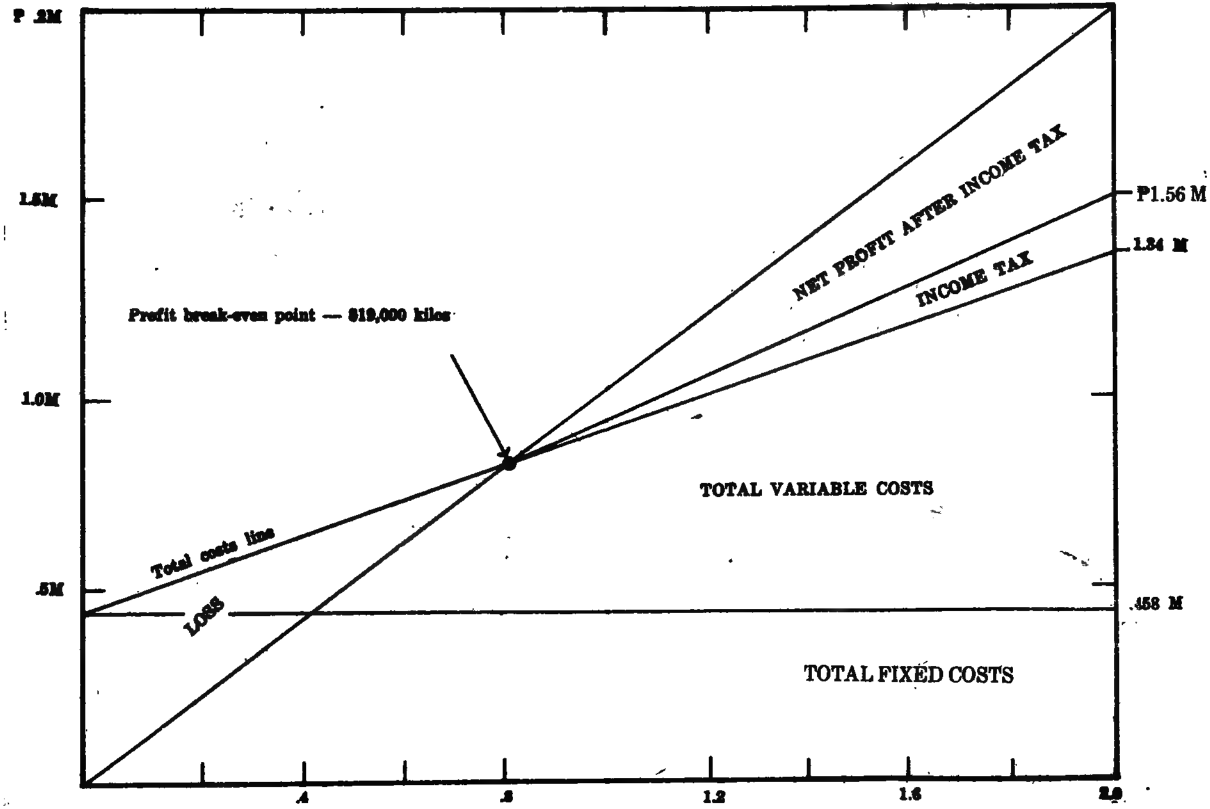
Exhibit 4

CALOOCAN MANUFACTURING CO.
PROJECTED BALANCE SHEET
DEC. 31, 1978 - 1981
(In Thousand Pesos)

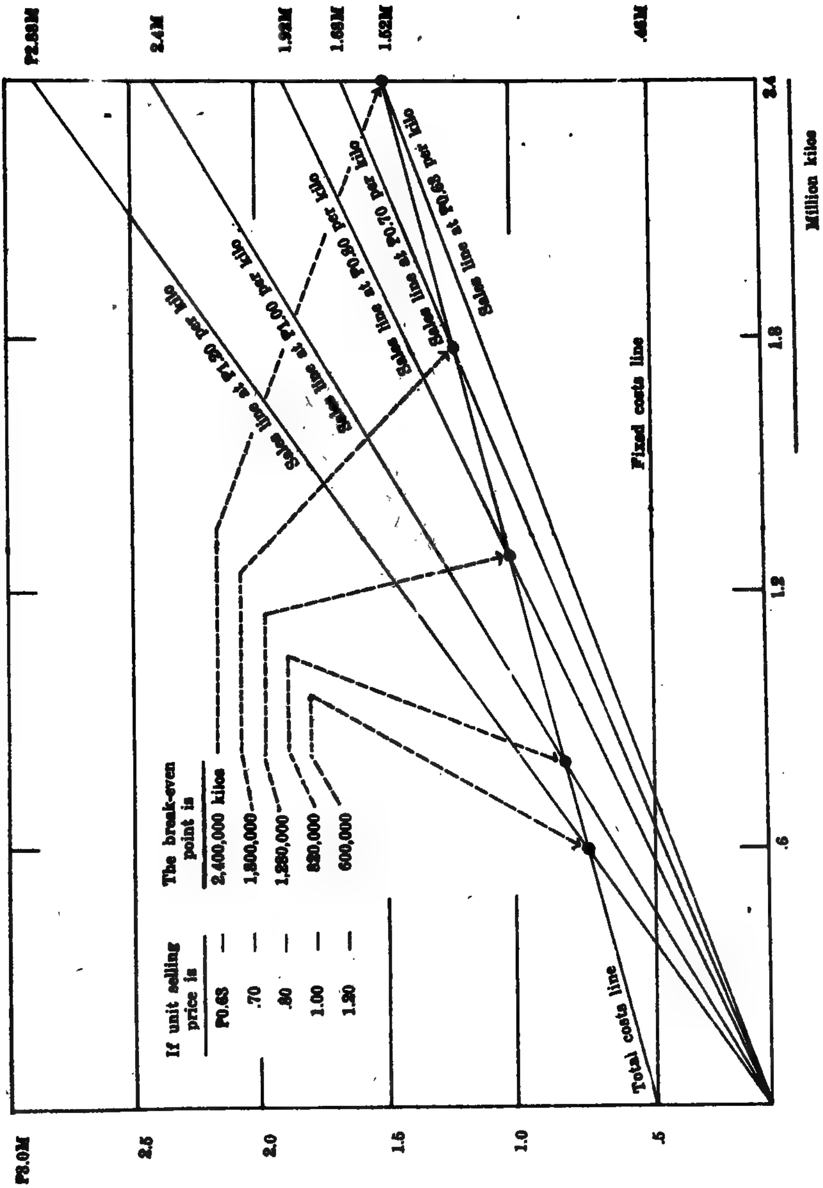
	December 31			
	1978	1979	1980	1981
Current Assets				
Cash (Exhibit 2)	₱ 100	₱ 110	₱ 162	₱ 170
Accounts receivable		100	200	300
Raw materials invetory		35	65	95
Finished goods inventory		60	110	150
Total Current Assets	100	305	537	715
Property, Plant and Equipment				
Land (Exhibit 2)	100	100	100	100
Buildings (Exhibit 2)	400	400	400	400
Machinery (Exhibit 2)	500	500	500	500
Equipment (Exhibit 2)	100	100	100	100
Total Cost	1,100	1,100	1,100	1,100
Less accumulated depreciation (Exhibit 1)		100	200	300
Net Book Value	1,100	1,000	900	800
Pre-operating Expenses				
(Exh. 1 & 2)	100	98	96	94
Total Assets	₱1,300	₱1,403	₱1,533	₱1,609
Liabilities				
Accounts payable	₱ -	₱ 15	₱ 24	₱ 34
Bank loans (Exh. 2)	500	500	500	100
Liability for machinery (Exh. 2)	400	200	-	-
Total liabilities	900	715	524	134
Stockholders' Equity				
Capital stock (Exh. 2)	400	700	850	950
Earnings retained in business		(12)	159	525
Total Liability & Stockholders' Equity	₱1,300	₱1,403	₱1,533	₱1,609

Exhibit 5

CALOOCAN MANUFACTURING CO.
PROFIT BREAK-EVEN POINT—1981
AT 1 UNIT SELLING PRICE



CALOOCAN MANUFACTURING CO.
PROFIT BREAK-EVEN POINT - 1981
AT 5 UNIT SELLING PRICES



If unit selling price is	The break-even point is
₱0.68	2,400,000 kilos
.70	1,800,000
.80	1,280,000
1.00	830,000
1.20	600,000

Exhibit 7

CALOOCAN MANUFACTURING CO.
CASH BREAK-EVEN POINT—1981

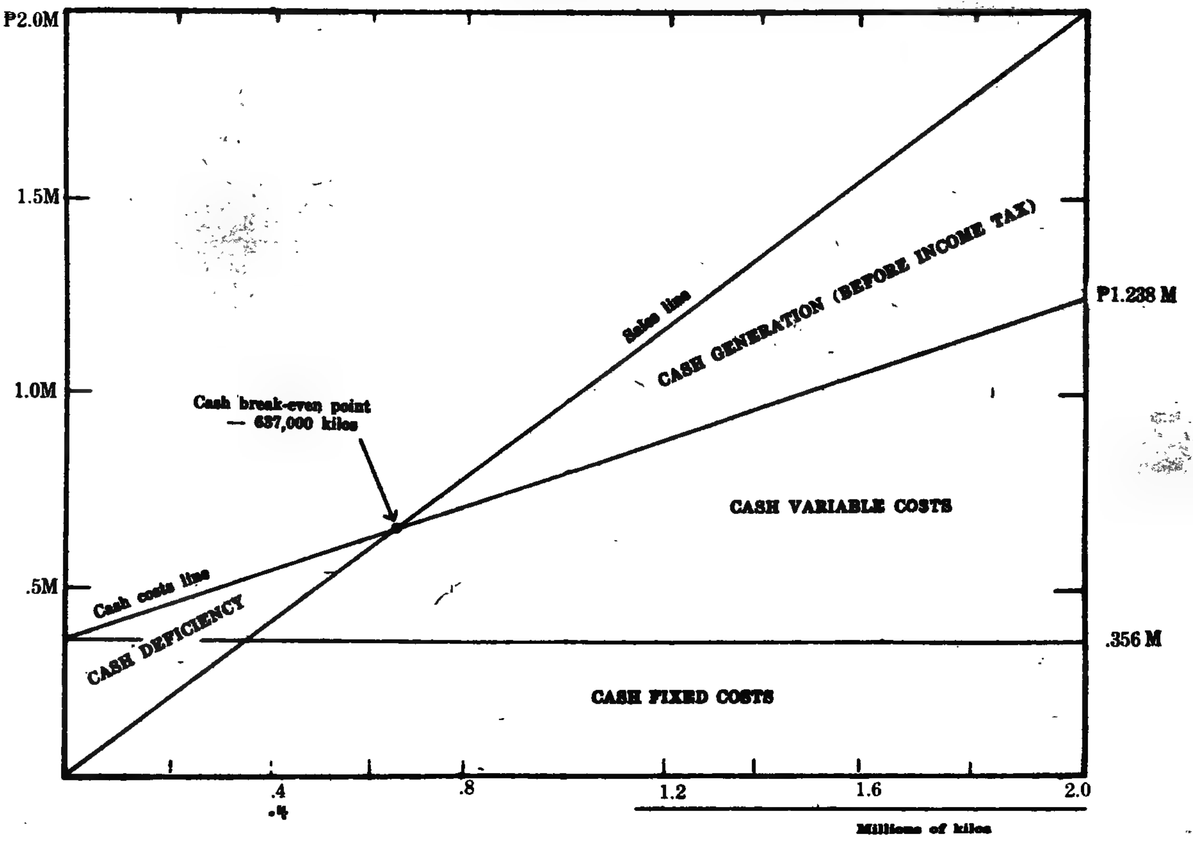


Exhibit 8

CALOOCAN MANUFACTURING CO.
DEBT SERVICE BREAK-EVEN POINT - 1981

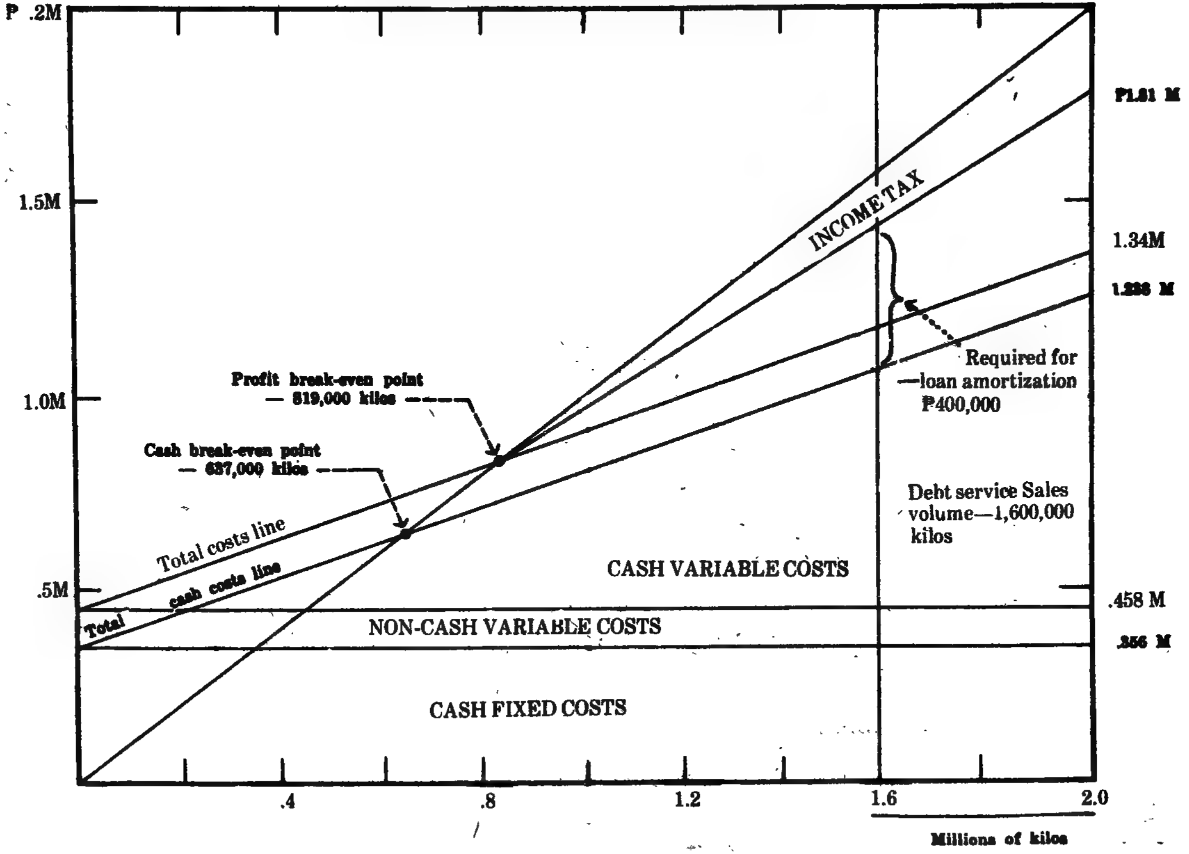


Exhibit 9

QUEZON CO.
A MULTIPLE PRODUCT LINE PROJECT
PROFIT BREAK-EVEN POINT—1981

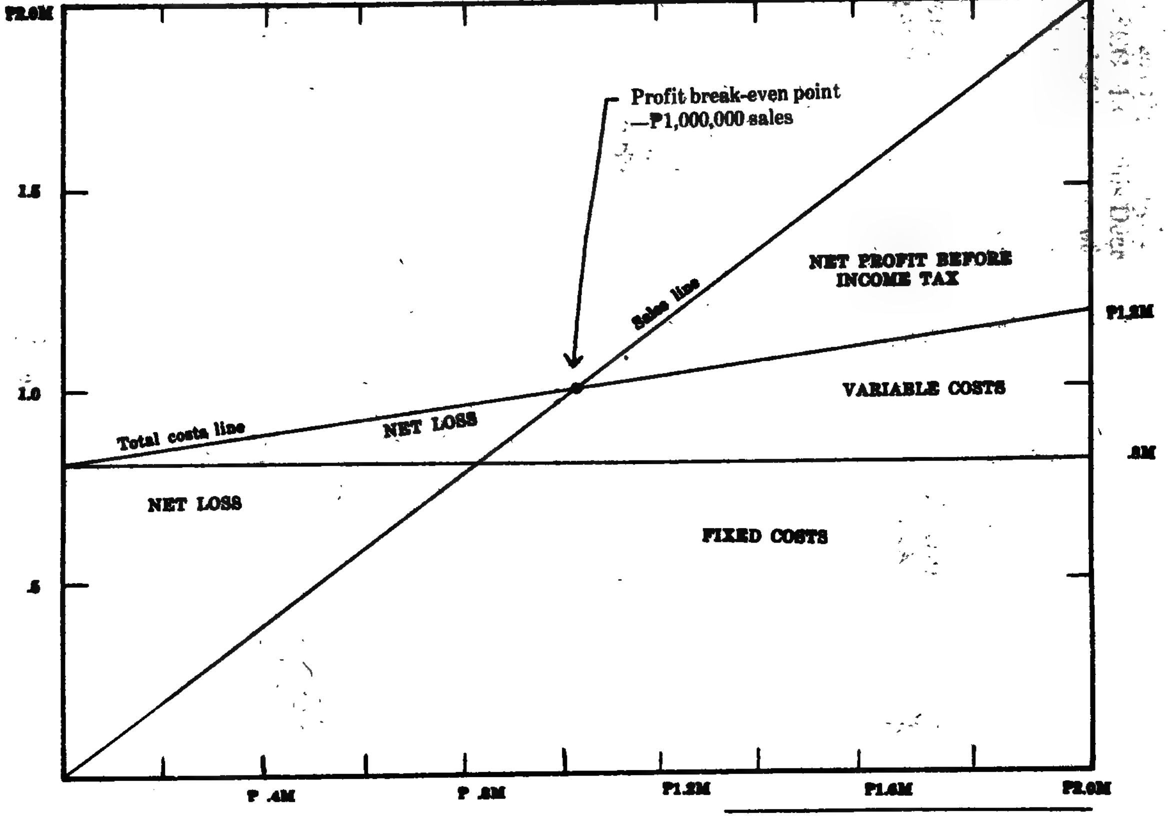


Exhibit 10

CALOOCAN MANUFACTURING CO.
PROJECTED INCOME STATEMENT
1982-1988
(In Thousand Pesos)

	1982	Annually 1983-1988
Sales at ₱1 per kilo	₱1,800	₱1,800
Cost of Sales—		
Raw materials	360	360
Direct labor	180	180
Depreciation	100	100
Others	180	180
Total	820	820
Gross Profit	980	980
Operating expenses—		
Salaries	120	120
Commissions	90	90
Representations	30	30
Others	145	145
Total before amortization	385	385
Amortization of pre-operating expenses	2	2
Total operating expenses	387	387
Operating profit	593	593
Interest expense	10	-
Net profit before income tax	583	593
Income tax	194	198
Net profit for the year	₱ 389	₱ 395

Exhibit 11

CALOOCAN MANUFACTURING CO.
PROJECTED CASH FLOW STATEMENT
1982-1988
(In Thousand Pesos)

	1982	Annually 1983-1988
Receipt—collection of accounts receivables	₱1,800	₱1,800
Cash disbursements		
Raw materials	360	360
Direct labor	180	180
Other manufacturing expenses	180	180
Operating expenses	385	385
Repayment of loan	100	-
Interest on loan	10	-
Income tax	194	198
Cash dividends	400	497
	₱1,809	₱1,800
Increase (decrease) in cash balance during the year	(9)	-
Cash balance, beginning of the year	170	161
Cash balance, of the year	₱ 161	₱ 161

Chapter V

Social Desirability of Projects

THE PREVIOUS CHAPTERS CONCENTRATE ON THE determination of the feasibility of a project from the viewpoint of the prospective lenders and business owners, in their individual or private capacities. The investors review the management, marketing, technical, financing, taxation, and profitability aspects of a project to find out: (1) the viability of the project in general; and (2) the profitability and degree of risk of their proposed investment in particular. This chapter considers the determination of the desirability of a project not from the viewpoint of the investors in their individual or private capacities, but from the viewpoint of the Philippine society as a whole. In the first-named viewpoint, the private good, or the selfish interest of the investors prevails. In the latter viewpoint, the public good, or the interest of the Philippine populace as a whole, is considered to be of primary significance.

Philippine government offices, government financial institutions, and international organizations such as the World Bank and its subsidiary, the International Finance Corporation, usually evaluate a project from the social as well as private viewpoints. Some private financial institutions also consider the social viewpoint, but to a lesser extent.

The social desirability of a project may be gauged by its (1) specific contributions to the Philippine society or economy in terms of increased government revenues, foreign exchange reserves, employment, and other factors, and (2) social rate of return, which is patterned after the discounted cash flow rate of return as discussed in Chapter IV.

1. SPECIFIC CONTRIBUTIONS

The specific contributions of a project which are treated here represent the effect on:

1. Government revenues
2. Foreign exchange reserves
3. Related industries
4. Consumers
5. Employees.

The following are not discussed separately as they can be classified under one or more of the above headings:

1. Utilization of local raw materials
2. Development of the community where the project is to be located
3. Raising of the standards of living.

The utilization of local raw materials by a project means: an increase in the international reserves through the non-usage of imported raw materials; the development of related industries which supply the raw materials; and the employment of more workers. The effect of a project on the development of a community is actually in the form of increased revenues for the local government, development of supporting industries, and added employment. The general standards of living may be raised through the provision of goods to the consumers at lower prices and through the increase in the purchasing power of the employees.

Government Revenues. A project may be of social benefit if it causes an increase in the government revenues. This type of contribution is quite significant when the government is having budgetary deficits. Hence, the expected net increment in the revenues should be pointed out. This increment may be quantified as:

	Period			
	Pre-operating		Operating	
	Year 1	Etc.	Year 1	Etc.
Taxes to be paid by the project:				
Import taxes				
Business taxes				
Income tax	(x)	(x)		
Other taxes	(x)	(x)		
Total				
Less decrease in import taxes	(x)	(x)		
Net increase in taxes				

(x) Not applicable

Before the start of the normal operations, the project will pay import taxes on the machinery and other types of taxes such as residence, real estate, and documentary and science stamps on the issues of capital stock.

When the project operates, business taxes (manufacturer's sales tax, specific taxes, etc.), and income tax will be paid in addition to the import taxes on raw materials, real estate tax, and other taxes of minor amounts.

The Philippine tax laws prescribe a 15% withholding tax on the remittance of income earned in the Philippines by foreign parties. This applies, for instance, on the remittance of interest to foreign lending institutions. Since this withholding tax accrues to the Philippine government, this may be included in determining the project's contributions to the government treasury.

It may be noted that during the pre-operating and operating periods those working for the project will pay their respective income taxes. Since this cannot be easily estimated, this is disregarded in determining the contributions of a project to the government revenues.

The annual tax payments of a project may be compared to its annual sales value in order to find out the government's share in the total pesos earned by the project. For some types of projects, such as cigaret manufacturing, the portion of the peso sales going to the government may run as high as 50% because of the high specific tax rates on cigarets.

Almost all project studies which are presented to the Philippine government and international financial institutions consider *only* the *gross* contributions to the government coffers. It sould be emphasized that when a project starts operations, some forms of anticipated government revenues may be lost. For instance, if a project will fabricate the spare parts required by sugar mills, the government will lose the import taxes which will otherwise be paid by the mills.

Foreign Exchange Reserves. The Philippines, just like any other country, needs foreign exchange reserves in order that she may be able to pay for her imports of vitally-needed machinery and materials, and maintain the value of the peso with reference to the dollar and other foreign currencies. The foreign exchange contributions of a project is quite significant if the Philippine reserve is going down or if it has reached a precariously low level. The expected annual net increase in the reserves which will be brought about by the project should be emphasized. The increase may be quantified as:

	Period			
	Pre-operating		Operating	
	Year 1	Etc.	Year 1	Etc.
Foreign exchange earnings	(x)	(x)		
Foreign exchange savings	(x)	(x)		
Total				
Less Foreign exchange cost				
Net increase (decrease) in foreign exchange reserves				

(x) Not applicable

The project earns foreign exchange if it exports all or part of its production. It saves foreign exchange if it manufactures goods which will replace those currently imported.

The impact of a project on the foreign exchange reserve position cannot be adequately evaluated unless the dollar costs of the project are also shown. The payments to foreign parties for the imported machinery, spare parts, materials and supplies, and for the engineering fees, salaries of foreign technicians, interest on foreign loans, and royalties, should be deducted from the total foreign exchange earnings and savings. The balance will represent the net increase or decrease in the foreign exchange reserves due to the setting-up of the project.

The financing scheme for a project may also affect the Philippine international reserves position. Thus, if a foreign loan is obtained, there will be an added foreign exchange receipt. However, dollar remittances have to be made later on in order to meet the loan amortizations.

Related Industries. The establishment of a project will promote the growth of other business firms which will provide the raw materials and services or which will further process its products. Thus the establishment of the Iligan Integrated Steel Mills, Inc. (IISMI) promoted the growth of existing firms, and/or the establishment of new ones in the following fields:

1. Suppliers of raw materials
    a. Iron mines (for the iron ores)
    b. Coking plants (for the coke)
    c. Limestone quarrying firms (for the limestone).
2. Suppliers of essential utilities/services
    a. Electric power system
    b. Technical schools
3. Processors or users of the products of IISMI
    a. Tubes plants (to use skelps, a product of IISMI)
    b. Galvanizing plants (to use cold rolled sheets)
    c. Food canning plants (to use tinplates)
    d. Wire rope firms (to use wire rods).

A project will help the subsequent processors of its products because it will make locally available the materials required by them. This may mean lower prices and a more steady supply. The supply of imported materials may be subject to disruptions due to the pier or customs strikes either at the foreign or local port, or due to shipping strikes. It should be emphasized here, however, that ironically, the setting up of a local manufacturing project may create a dis-incentive to the processors. This is true, for instance, if the project will work for an increase in the tariff rates on the goods it will produce. Having succeeded in this, the project will subsequently increase the selling prices to levels which are higher than the current landed cost of imported items. This problem will be compounded if the products of the project will be inferior to the imported goods, or will not meet the specifications of the local processors.

Consumers. The establishment of a project will benefit the consuming public through the lowering of the retail prices. Thus, with the setting-up of projects in the rubber footwear manufacturing industry, the average wholesale prices per pair of rubber slippers and sandals consistently decreased from 1960 to 1965 (based on Central Bank data):

1960 - ₱1.99
1961 - 1.52
1962 - 1.31
1963 - 1.03
1964 - 1.17
1965 - 1.12

If the prices are lowered without sacrificing the product quality, the consumers will be able to buy more with the same purchasing power, thus ultimately raising the general standards of living.

The price reduction will be significant in cases of products where the ocean freight is high as compared with the FOB cost. For instance, one local firm was able to produce in the 1960's a canned vegetable juice which retailed at ₱0.45 per can of 7-3/4 fluid ounces, while an imported can of 5-1/2 ounces of the same brand and quality was retailing at ₱0.60.

Employees. A project is socially desirable because it will give better opportunities to those currently employed, reduce the ranks of the unemployed, properly compensate the employees, and train them. The total personnel to be employed and the compensation may be quantified as:

	Period			
	Pre-operating		Operating	
	Year 1	Etc.	Year 1	Etc.
No. of persons to be employed				
Filipinos				
Foreigners				
Total				
Total wage bill, including fringe benefits				
Filipinos				
Foreigners				
Total				
Average wage bill per employee				
Filipinos				
Foreigners				

During the pre-operating period, a project will require workers for the land clearing and levelling, road constructions, preparation of the civil works, and installation of the machinery.

The distinction between Filipino and foreign workers may be necessary in order to find out the extent to which Filipinos are given preference. If practical, the number of persons to be employed may be further broken down into the various skills such as:

1. *Factory workers—*
    a. Unskilled and casuals—as manual laborers, janitors, and helpers
    b. Semi-skilled—as assistnat machine operators and carpenters
    c. Skilled—as machine operators and electricians
    d. Engineers and supervisors.
2. *Office workers*
    a. Unskilled
    b. Clerical
    c. Professional.

The total employment may be compared with the total capital requirement in order that the labor intensity may be ascertained.

The labor intensity of selected industries, based on the latest Economic Census of the Philippines, is shown below:

Manufacturing Industry	Employment	Inventories and fixed assets	Capital required per employee
Foods	54,000	₱529,000,000	₱ 9,800
Beverages	10,000	94,000,000	9,400
Tobacco	13,000	104,000,000	8,000
Textile	29,000	400,000,000	13,800
Rubber products	6,000	82,000,000	13,700
Chemicals	14,000	260,000,000	18,600

The total compensation of the employees, which covers the basic pay and the fringe benefits, may be compared with the annual sales in order to find out the employees' share in the gross earnings of the project.

The efforts exerted by a project in training its workers cannot be under-estimated. The skills to be acquired by the workers will directly benefit not only the project itself, but also the other firms in the same industry as well as firms in other industries.

2. SOCIAL RATE OF RETURN

Although the effects of a project on government revenues, foreign exchange reserves, or employment (number of workers) can be quantified separately, the effects on these three items cannot be added up. Furthermore, the effects of a project on the related industries, or on the consumers cannot be stated objectively. Added to these limitations is the fact that it is difficult, if not outright impossible, to rank these specific benefits as to importance. In other words, which should be preferred—a project which will employ 50 workers and cause an increase of ₱100,000 in the annual government revenues, or a project which will employ 100 workers, and cause an increase of ₱50,000 in the government revenues? For these reasons, it may be difficult to rank various projects from the viewpoint of their social desirability, if the specific benefits alone are used as the sole criterion.

A new tool, the social rate of return is currently employed by the World Bank and its affiliates and by one of the Philippine government financing firms. This tool is used to compare the social desirability of various projects. It is expected that more and more of the local and foreign financial institutions will be using this technique in the future as its practicability is appreciated.

Social Profit. The first step involved in determining the social rate of return is the ascertainment of the social profit through the construction of the social income statement. This statement is from the viewpoint of the Philippine society as a whole, as distinguished from the conventional or private income statement like the one discussed in Chapter IV, which is from the viewpoint of only one very small segment of the Philippine society—the stockholders of the project. A social income statement may be compared with a private one as follows:

PROJECT A
(Single Proprietorship)
Income Statement for 1979

	In thousand pesos	
	Private	Social
Sales	₱500	₱474
Less cost and expenses		
Payroll, materials, etc.	400	400
Taxes	10	-
Depreciation	25	25
Total	435	425
Net profit	₱ 65	₱ 49

For Philippine projects, the social income statement is substantially the same as the private income statement, except for two items: the sales and the taxes.

The sales values for the two statements above are based on the following assumptions:

	Private	Social
No. of units to be sold	50,000	50,000

	Private	Social
Per unit:		
Selling price	₱10	
Landed cost of imported equivalent		
CIF Manila		₱ 9.00
Brokerage, bank, and other charges		.47
Subtotal		9.47
Import taxes		1.53
Total		₱11.00

For the private statement, the sales of ₱500,000 is based on 50,000 units at the projected selling price of ₱10 per unit. For the social statement, the sales of ₱474,000 is based on 50,000 units at the landed cost before import taxes, which is ₱9.47.

Under the social rate of return concept, a project should be credited only with the value which would otherwise be paid by the Philippine society as a whole, if similar goods were imported. Hence, the credit is only ₱9.47 per unit, which is represented by the CIF value of ₱9.00, and charges of ₱0.47. The ₱9.00 represents the payments to foreign suppliers, shipping companies, and insurance firms which will be made by the Philippine society. Although all or part of the ₱0.47 may represent payments to some sectors within the Philippine society, this has to be reckoned with as this is for specific benefits. If it were not for the importations, the equivalent in resources and efforts can be diverted to other useful endeavors. The import tax of ₱1.53 is disregarded as this represents a mere transfer of funds from one sector of the Philippine society to another sector (the government) with no specific benefits involved.

The taxes of ₱10,000 which is part of the costs and expenses under the private statement is disregarded in the social statement for the same reason.

Rate of Return. The equivalent social cash generation for the entire life span of the project may then be obtained. For Project A, the equivalent cash generation for 1979 is ₱74,000—represented by the sales value of ₱474,000 less the cash costs and expenses of

₱400,000. Assume that the required investment is ₱100,000 as of January 1, 1979, and that the cash generations are as follows:

1979	-	₱74,000
1980	-	45,000
1981	-	17,000

The corresponding discounted cash flow social rate of return is 22%. The detailed procedures involved in the determination of the discounted cash flow rate of return are explained in Chapter IV. The 22% is proved as follows:

Investment as of start of 1979 — ₱100,000

Cash generation =

As of end of	Amount	Discount factor at 22%	Discounted value
1979	₱74,000	.82	₱ 61,000
1980	45,000	.67	30,000
1981	17,000	.55	9,000

Total generation discounted to January 1, 1979 ₱100,000

Interpretation of the Social Rates of Return. The discounted cash flow rate of return of alternative projects may be considered—in addition to the specific social benefits—in ranking the projects for purposes of government assistance. Normally, the higher the social rate of return, the higher should be the priority. However, the social rate should be compared with the private rate in order that a more intelligent decision may be made.

Assume, for instance, that the rates of three projects are as shown:

	Project		
	A	B	C
Social rate of return	22%	22%	50%
Private rate of return	48	22	5

Based on the rates of return alone, Project C should be the first to be given financial assistance for two reasons: first, it has the highest social rate of return, indicating that it is the most socially desirable; second, it has the lowest private rate of return, indicating that the project will find it difficult to obtain financing from private sources. As between Projects A and B, Project B should be preferred by government financial institutions as private capitalists will be more willing to invest in Project A than B.

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